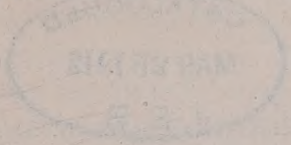


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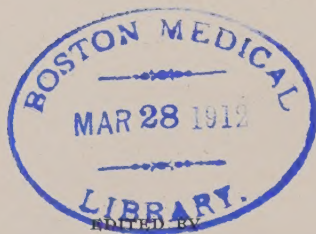


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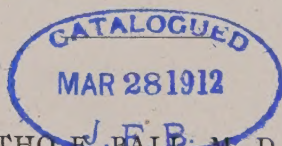
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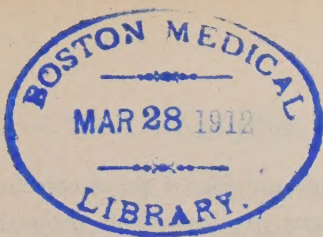
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EDITORIAL.

THE SUPERMAN IN MEDICINE.

The curious insistence of religious healing societies to usurp that which does not rightly belong to them, is so disturbing a factor in the general practitioner's life, that the even tenor which was wont to characterize his unassuming actions as servant to the public, can no longer be reckoned as his best asset. That destruction of the mental placidity, which was his by much logical thought, should at present obtain, is not due altogether to the advertised triumphs of the mental healers, but to a conflict in his own mind involving the awakening of his blunted susceptibilities to opportunities which were within his reach but which were overlooked in his enthusiasm to deal exclusively with disease. What these opportunities are the Emmanuel Church has blatantly arrogated to itself; and by its insidious methods it has not been unsuccessful in operating "clinics" in various cities, by dominating through personal influence quite a number of partially trained minds. And here it would be well to pause and ask the general practitioner if the personal note in his manner of the care of the sick is not too completely in abeyance, and how far, if he really attempts it, he allows full rein to his individuality to override the vacuous manifestations of functional brain disorders. Or does his routine work weaken his individuality to so great a degree that its poor remnants are as naught against a menace that cannot but be apparent to him, but which he fails to vanquish because of a lack of will power in compelling his patients into saner assents. Surely, for the distraught to find a sanctuary, it is necessary to pit against them a stronger personality than the sort of medical man who is so entirely engrossed with the signs and symptoms of disease that all else is considered by him of minor importance!

The idea of detaching medicine from the seething currents of modern thought, is altogether too medieval to be encouraged and abetted in the expectation of its survival at this late day. We take it there still must

be a goodly number in the rank and file of the medical profession who are unwilling to concede that any pressure from without should in any way affect the routine of their work; but though precedents are occasionally of some excellence to hark back to, and are easy quotation in substantiation of a stubborn front, the hardship we would impose on all those who have stiffened themselves against what are foolishly thought to be unjustifiable incursions, is the one of greater severance with the past and a more intimate relation to the outstanding marks of modernity. To have labored in behalf of mankind only to realize after years that though the practical results were good, the man in the street has remained unaffected by "the great benefactors of mankind, deliverers," in so far as his judgment of doctors in general is the commonplace of criticism the world has harbored too long, is a matter that should not be construed into a calumny because of seeming ignorance and hostility. It merely indicates that both critic and criticized are sufferers from a want of judgment: the former on account of a prejudice that was provoked by the inattention of his own doctor to his mental needs when he lay a sufferer in the vise of some serious disease; the latter on account of an oversight that his personality is a very important factor in controlling the vagaries of the functional mental disturbances peculiar to those whose equilibrium is destroyed through pain.

Individuality is a force to-day in nearly every walk of life except in medicine. There, knowledge counts for much, and rightly, but knowledge is not, nor can it ever be, the agent which alone is capable of combating certain symptoms which are the concomitants of nearly all the graver symptoms so beloved of all painstaking practitioners. What the importance of the so-called lesser symptoms is, need not be contended here; but that they have eluded the supposedly firm grasp of the doctor of to-day is made manifest to all of us by the success of the multiplicity of religious healing societies. And they have eluded him because of his unwillingness to reckon them in the same category with all those salient points of disease inculcated into him in his college curriculum, or by the various text-books that have broadened his mind when he was a full-fledged doctor. Whether or not a vagary that becomes a fixed idea should be met with sympathy or derision, depends on the mental bias of the attending doctor, and has so many ramifications as an argumentative proposition that only a very brave man would attempt to define his reasons for assuming a staunch attitude in the matter. But even his strongest contention for his attitude towards peculiar mental manifestations, will not make the kindest critic think better of him, unless the convincing fact obtains that by sheer force of his individuality there was a complete cessation of all untoward mental symptoms.

That the times are ripe for the Superman in medicine, no student of the present socio-medical conditions can deny. He is as necessary in the limited republic of medicine as in literature, politics and science. For with his deep knowledge and his exasperating egotistical estimate of himself he will not fail to make amends for the past feeblenesses of our many general practitioners who have not his high lights. His very egotism, on account of its outcome from an unusual intellectuality, will be fraught with enough compelling force to down all those unseemly mental manifestations which our easy-going methods have allowed, not only to spring into existence but grow with startling luxuriance. Not till the Superman arrives in medicine will there be any abatement in the success of the practicers of the pseudo sciences; for no matter whether we prate until the crack of doom about the stupidities inherent in the many advertised methods, their life will not be imperilled a whit, for the very loudness of our talk but proclaims our deplorable weakness. But with the advent of the Superman, confusion will enter their camps; for he will at once show, through his personal influence over his patients, that the power of doing good does not really belong to religion when the matter is a purely medical one; and that the science of medicine, though remiss in appreciating the import of certain mental disorders in its zeal to alleviate physical suffering, can do the right thing by all patients when the strength of an individuality marshals its forces alongside those already recognized forces which derive their value from a deep and wide knowledge of the medical sciences.

THE MEDICAL SCHOOL AND ITS ENTRANCE REQUIREMENTS.

The matter of the proper education of the modern medical student has been threshed of late by so many men in a position to know just what befits the aspirant after medical honors, that for any one who does not carry the weight of authority as a recognized educator to call a pause to the wave of enthusiasm, must be thought an attitude detrimental to progress. That we are decidedly in favor of the four year course which to-day obtains in all the better medical schools, goes without saying; but an altogether different matter is the insistence of our educators on the absolute necessity of all medical students to hold a bachelor's degree before entering the medical school. To make anything in the educational line applicable to all, many, if not all, the facets composing a many-sided question should be envisaged; and though the results of so doing are on the side of education, we must not overlook the fact that the best education a medical student can receive is not so

closely connected with a previous university education as our educators would have us to believe. In other words, is not the mere college man who enters a medical school of excellent standing, quite as well equipped for an understanding and appreciation of his new studies as the man who holds a bachelor's degree? Of course we do not for a moment mean that he has had the educational advantages of his so-called superior brother, but what we do mean is that his college education suffices for his medical studies. For to our narrow horizon, founded on observations of the best medical results after the enjoyment of either preliminary educational privilege, the doctor who would incur the displeasure of our advanced educators on account of the lack of a bachelor's degree, holds his own in the medical world as far as the desired term of "educated doctor" goes, with him whose circumstances were of the affluent sort to allow of the higher education as promulgated by various university presidents.

Preliminary education of the sort that widens the mind to an appreciation of the needs of a knowledge of some of the dead and living languages, of literature and history, should be exacted from every student about to enter upon his medical studies; but though we do not wish to underestimate the value of these advantages, what is really of more importance is the medical school he chooses, and the clinical advantages it offers. We are fully aware that a medical school that can claim a close relationship with a university is more advantageously placed in a worldly sense than one lacking the honor; but can it be contended in all fairness that its roster of professors and its clinical assets are superior to the medical school without such an alliance? The university, it is true, sets its seal upon the medical school, but are the students who leave it better equipped in a medical sense than the students who graduate from a school which demands a four year course of study, but which has not had the kindly directing hand of a university?

If we are to raise the standard of medical education in this country, let us talk less of the importance of an alliance of medical schools with universities and more about extending the years of medical study from four years, which now are thought to be sufficient, to six years. For the prime importance that makes for equipment of a full-fledged student of the medical sciences is not the four years spent at a university, but the mastery of purely medical studies gained in a medical school. And surely in these modern days when the number of studies is on the increase, six years would not be too long a time to devote to the preparation of what might be called the most serious calling in the world. Again, by omitting the bachelor's degree, and allowing the medical student to enter on a six year medical course, after receiving his college degree at

eighteen, his age at graduation would be twenty-four instead of twenty-six, as is always the age when a bachelor's degree is previously demanded; and his advantages would not only be a gain of two years—important years when the necessity of making a living is concerned—but the greater gain of having a better knowledge of the medical sciences than all the bachelors' degrees throughout the world could give him.

The higher education of the medical student is a different matter from that of the purely literary student. With the latter his education is completed when he receives his bachelor's degree, whereas with the former there are before him new and intricate vistas to engage his serious thought. An illiterate mind cannot grasp their many importances; only one that is educationally prepared has the required aptitude. But preparedness need not be insistent on a university degree; a college diploma, despite the dicta of our educators, can and should suffice. In fact, the much-vaunted preliminary university education, while its benefits, as a distinction to be used to impress those doctors who are less fortunate, cannot be overestimated, does not hold so great an intrinsic worth for the future doctor as the educators would desire us to believe; for though it may broaden somewhat the mind of the beneficiary, it has as yet failed to add two assets to what is absolutely necessary in the doctor's educational ledger—a reading, if not a writing, knowledge of French and German, and enough of the right appreciation of classical English to prepare a medical paper so that distinction is one of its merits. English universities can lay claim to the making of earnest students of the mother tongue, with results, when it comes to putting their thoughts on paper, that are gratifying; but even with English medical students there is a deplorable deficiency in the aforementioned languages,—a deficiency that has recently called forth a protest from Professor Osler. The importance of a knowledge of these languages cannot be questioned by any one who knows and appreciates what French and German medical men are doing to-day in the matter of research work, not to mention other departments of medical science; and since these very lacunæ occur in the preliminary university education which the educators amongst us deem absolutely necessary for a correct appreciation of future medical studies,—instances observed by us cannot but constitute criteria of these glaring defects,—would it be right to withhold a harsh criticism of those who are now advocating a university education for the medical student of to-day?

A SURGEON'S PLEA IN BEHALF OF THE PUBLIC.

In these latter days when many criticisms are passed on the autocratic attitude of the surgeon toward his patients, not only by the patients themselves but by that class of doctors known as internists, the incisive remarks of Dr. John C. Munro in his paper, "The Surgical Rights of the Public," read before the Canadian Medical Association, have enough of that best of all qualities, opportuneness, to make even the unthinking part of the medical profession aware of the fact that surgery with all its shortcomings is master in the medical field. This opinion, which we express without any hesitancy, needs no bolstering by indiscriminate praise from fanatics in this special province, for its daily performances are of so high a character that its supremacy cannot be questioned. And with the thought in mind that the behests of surgical interferences are not to be relegated to secondary considerations, Dr. Munro advocates, what is clearly written across the history of modern medicine—to-wit, the public is entitled to the best that surgery can offer, and for internists to carry their teachings into the province of surgery, in the hope that in that way the public will become cognizant of the importance of internal treatment in lieu of operative procedures, is an intrusion that is a wrong to the unsuspecting public, inasmuch as in many cases the delay instituted by the stubborn attitude of the internist to operations, is often the cause of irreparable damage to the patient.

Now the question which assails the thinking mind upon reading Dr. Munro's expression of a somewhat deplorable situation in the practice of medicine, is not whether he is entirely right or entirely wrong in his contentions, but whether the public is as much the victim of the misdirected enthusiasm of the internists as he makes it out to be. Perhaps in his enthusiasm for his chosen specialty, Dr. Munro sees only the low lights of a treatment that has for its advocates quite a number of seemingly honest men. And again, since surgery stands for much in the advancement of medicine, it is possible that the immediate relief granted a patient through surgical interference, may have blinded him to the slower beneficial processes arising from internal treatment. In other words, does the internist really persist in his treatment of a case even after he realizes that surgical help is the only solution, and is his judgment so warped that a case which is purely surgical from the start and should be met with the knife at once, is made the object of experimentation simply to gratify a hobby that has all the bad points of the exploded school of empiricism?

In writing on a subject that is not merely a wrangling of the common sort, such as doctors, as well as others, indulge in, but one that involves the prolongation of the life of the patient, statistics are all important in

adjudging the offenders; but since these are lacking, we must fall back on the results of the achievements in the specialties under consideration, if we would stand the test of unbiased critics. That internal medicine is striving through many difficulties to recognition as an important entity in the medical household, is a fact that should not be overlooked. Not unlike all other ambitions that are slightly frowned on because of their youth and irritating exuberance, it makes much of its successes; in fact, heralds them forth with rather undignified fervor. What these successes are, in the limitations which the various other specialties in the medical profession would impose, we do not question; but what we do question is the right of its enthusiastic and somewhat unruly disciples to make inroads into a specialty, such as surgery, that has stood the test of the severest criticism, only to come out with flying colors. No matter what the charge against surgery by its scattered detractors, the fact remains that it has always held its skirts clear of the bedraggling that only too often accompanies experimentation in medicine. Its directness, its clarity of thought, its uninterrupted advances and, finally, its independence, have placed it on a higher plane than that of any other specialty in medicine for the reason, that these are qualities that make for confidence; and are not at all germane to the saying of Agathon, as related by Aristotle in his "Poetics:" "It is a part of probability that many improbable things will happen."

OPINION AND CRITICISM.

DICKENS' DOCTORS.

A subject that is of perennial interest to all medical men, who are not averse to having their defects mirrored in the mind of a great writer, is whether or no the writer has such stubborn preconceptions that a series of characterizations is evolved with small claim to truth. The charge of exaggeration has been brought against the writings of Charles Dickens so often that a repetition of the criticism would bear all the earmarks of triteness; and though it is well-nigh impossible to pass judgment on any of his characters without harking back to the comforting thought that his very exuberance prevented his describing men and women just as they are, in the case of the doctors in his novels we are not unwilling to admit that they are so free from exaggeration that even, though many years have elapsed since their creation, their salient points are excellent reminders of certain defective features in medical men whom we meet to-day. Dr. Henry Leffmann in his recently published book, "About Dickens," has an interesting chapter on Dickens' doctors; and while he recognizes the strength of the portraiture, greatly deplores the types the novelist selected. That a novelist of Dickens' surpassing genius for keen observation should have limited himself to medical men of the blandly uninteresting sort, such as Doctor Desprez in Stevenson's "The Treasure of Franchard," to mention only one instance in modern literature, is really asking too much; and despite our efforts to overlook the shortcomings of our medical fellowmen, especially when the company in which we happen to be is "mixed,"—professional courtesy, alas! is often synonymous with insincerity,—the revelation is often borne in on us that humor could vanquish many a foible, were it allowed to exercise its beneficent offices, in reminding the medical types which are always with us, that their dignity is not real dignity and their scientific pose not so adamant that it is proof against attacks.

What medical reader of Dickens has not met the counterparts of the submissive and unobtrusive and grateful-for-small-fees, Mr. Chillip, who confined Mrs. David Copperfield, and "was the meekest of his sex, the mildest of little men;" of Mr. John Jobling, M. R. C. S., Medical Director of the Anglo-Bengalee Disinterested Loan and Life Assurance Company, who "could shake his head, rub his hands, or warm himself before a fire, better than any man alive; and had a peculiar way of smacking his lips and saying, 'Ah!' at intervals while patients detailed their symptoms, which inspired great confidence;" or of that well drawn

pre-Lister doctor, who to some extent survives to-day, Haggage, accoucheur to Mrs. Dorrit in the Marshalsea Prison and "amazingly shabby, in a torn and darned rough-weather sea-jacket, out at elbows and eminently short of buttons (he had been in his time the experienced surgeon carried by a passenger ship), the dirtiest white trousers conceivable by mortal man, carpet slippers, and no visible linen?" Humor has done in these instances what all the serious writing in our newest novels, in which doctors are conscientiously depicted or aggressively attacked, has failed to effect; for by its magic wand there stand before us types which, though not of great loveliness, are much more life-like than any serious stultification could be, and are, moreover, unforgettable lessons that make even the most modern of modern doctors aware that imperfections somehow fall to him as to other mortals.

We often see in medical journals rapturous comment when a novelist strikes the right key in describing the sacrificing vocation of the medical practitioner,—his kindness, his sympathy; when scientific expressions are correctly used and vivisection is not too severely scored. Our medical hearts warm to the novelist who champions vaccination and makes no blunders as to the aseptic preparations prior to an operation. Such medical knowledge predisposes the kindly critic and the kindly reader to enthusiasm, irrespective of the undisguised stiltedness of the speech of the medical marionettes. In Dickens' novels, on the other hand, there is a delightful absence of medical talk that flirts with science; but to bridge this defect we have a number of portraits of medical men, so superior to the faulty characterizations by modern writers, that much can be forgiven one whose humor, always on the alert for human imperfections, is especially boisterous when doctors swim within his ken.

LITERARY NOTES.

A work that has enough of appositeness to fit in neatly with the tendency in the medical thought of to-day, is Dr. W. Bieganski's "*Medizinische Logik*," recently issued by the well-known Wuerzburg publisher, Curt Kabitzsch. The whole gamut of medical logic is so thoroughly gone over that the intelligent reader, who is avid of the subject, will have no difficulty in acquiring sufficient thought to stimulate him to the very best appreciation of its importance. Medical logic in the sense of a science is really a matter of recent times—of the last half of the nineteenth century—though there were indications of its worth as far back as Greek medicine. In the so-called "Hippocratic Collection," which has been attributed by the latest historical criticism to various writers, may be found the discourses "On Ancient Medicine," "Of Art," and "Precepts," bearing on the subject of the science of medicine and

methodology. In the later development of Greek medicine, methodological questions assume an important part in connection with the attitude of the Empirics. But in all these writings methodology was not scientifically considered nor was it made a special subject; therefore, for the present generation of doctors, it has only a historical significance. Nevertheless, it should not be forgotten that the mere mention of the subject indicates that even in ancient times doctors recognized the necessity of giving thought to the why and wherefore of their knowledge, and the fruits of their thought. Later on the importance of the realization of this necessity was more and more relegated to matters of secondary worth, and it did not make its reappearance as a something that should be scientifically considered in a university's curriculum until about two hundred years ago. At that time was evolved the subject of self-discipline, the so-called medical propædæutic which had no definite lines of demarcation as a distinct science, but was made applicable in that extended province of medicine which included "all things and certain other things." Propædæutics, as taught in the universities at the beginning of the nineteenth century, included lectures on the history of medicine, on the encyclopedia of medical sciences, on methodology, deontology, and similar subjects. The study of the science of medical knowledge was discussed in propædæutic text-books in a fragmentary way and showed, neither the exigencies and the demands of scientific criticism nor the requisites of medical practice. Although the eighteenth century was rife with the teachings of propædæutics, only two writers of exceptional merit took up the matter of medical knowledge in a manner not attempted before. One of the books was by the Swiss, Johann Georg Zimmermann, who was the pupil of the great physiologist and polyhistor, Haller, and bore the title "Experiences in the Art of Medicine" (*Ueber die Erfahrung in der Arzneykunst*). This work appeared in 1763 and was, at the time of publication, widely read not only in Germany, but also in France and Italy, where it appeared in French and Italian translations. The author shows beyond a doubt that he is an adherent of the teaching of reasoned experience founded on experimental bases, and denounces, in no unmeasured terms, the false and superficial observations resulting from medical experiences at the bedside. This is the pivotal idea of a book which, however, contains no systematic exposition of the methodology of medical sciences. The other work, "Of the Degree of Certitude in Medicine" (*Du degré de certitude de la médecine*), is by Pierre Cabanis, physician and philosopher, trained in the School of the Encyclopedists, and especially well-known as a prominent figure in the French Revolution. The author differentiates between the certainty that is exact and unvarying and the certainty that is practical, and is founded on possibilities. Medicine in his opinion is a matter of the certainty founded on possibilities and resembles, moreover, the pursuit of agriculture, because the latter is also fraught with but little

surety. The works of Zimmermann and Cabanis are a defense of medicine and a reply to the oft-repeated allegations of the times—it would be well here to remember Molière's comedies—but though they are deserving of praise because of the stand the authors took in behalf of medicine, they are to-day only of historical value, since they do not contain a valid explanation of the processes leading to recovery, or any criticism of medical knowledge.

What sort of aid was given to the insane in the seventeenth century is graphically described by Dr. Dubos, in his Lille thesis, wherein is specially mentioned the Order of the Good Sons, who in 1615 established at Armentières, a refuge into which were received the alienated until the time of the French Revolution, when the property was confiscated. Though the Order ministered to the mentally sick with a solicitude worthy of the religious fervor which characterized all their benefactions, it would be folly to say that the treatment was the sort required in the respective cases. For the nature of the derangements was a closed book, and the idea of the possibility of a cure or the efficacy of certain drugs, was outside the limited comprehension of the Order. Charity toward others was the impelling cause which induced the members to shelter the mentally afflicted who wandered aimlessly along the public highways, exposed to injuries and privations. Yet, it was not only a charitable feeling that made of each member an enthusiastic worker, but the fixed idea, that only in saintly or religious abodes could there be effected the deposition, by the power of exorcism, of the demons held responsible for the mental disturbances. In France it was the custom to conduct the insane to churches, either in Castel-Sarrazin, a village in Upper Languedoc, or in Bonney, a village in the Vosges, for the purpose of driving the demons out of the demented; an act of exorcism that was not unwillingly undertaken by the officiating priests. At Besançon, the fête of Saint-Suaire (The Holy Shroud) was made memorable by the presence of a large number of insane who had been brought from afar to undergo a cure; for the positive belief was, that not even the most hardened demon was proof against the destruction dealt out by touching a relic that was unequalled for holiness. Saint Gilda, mentioned by Rabelais, officiated in Brittany, Saint Menoux in Bourbonnais, Saint Dizier in the department of Belfort. Finally the altar of Saint Nazaire, at Ablain, a village situated some distance from Arras, in the canton of Wimpy, attracted crowds from all the provinces. And even to-day the belief in the help of this sort, in those parts of France where sorcerers and sorceresses obtain, is not entirely a thing of the past, for Dr. Dubos recalls a scene which he witnessed, when quite young, where exorcism was resorted to in a Basque village on the Spanish frontier.

A matter of interest to medical men is the brochure "*La nouvelle méthode hyperémique de Bier dans les textes d'Hippocrate*," by Dr. Foustanos, of Syra, Greece, which was recently presented to the Académie de Médecine. As is known, Bier's method consists in producing a pas-

sive hyperemia in the diseased parts by means of a venous compression a little above the seat of disease. Dr. Foustanos shows that this method of treatment, in its applicability to atrophies, has been well described by Hippocrates in his treatise entitled "The Physician's Establishment, or The Surgery," in which he says, in paragraph 24, "in treating parts which are atrophied, we must comprehend a considerable part of the sound limb with the bandage, so that by the influx thereby produced, the wasted part may acquire a supply greater than its loss, and may be thus disposed to growth and restoration of its fleshy parts." The Hippocratic method was in vogue for many centuries; Galen describes it in detail in his works and recommends it highly to all practitioners. But despite Galen's praise, it fell into disrepute for reasons as yet unmentioned in the history of medicine, and it has remained for Bier's perspicacity to rescue it from its undeserved oblivion.

Dr. Lenoir, a major in the French colonial troops, gives some interesting details, in the *Annales d'hygiène et de médecine coloniales*, in regard to the poisonings of the incarcerated at New Caledonia by means of datura. This plant grew formerly in great abundance on the island, but stringent laws have been passed to effect the destruction of a means by which crimes were perpetrated. Now although the price of datura has soared very high on account of its scarcity, cases of poisoning are not infrequent. In this penal colony the passions, on account of their being continually hampered and cramped, are furious when opportunities arise where their full play can be effected without fear of discovery. Of all the passions, that of cupidity is most highly developed, since the one idea of all the prisoners is to possess that which can better their condition and put them above their companions. Their methods for achieving this end are not unworthy of the duplicity and craft of the Borgias. The unfortunate one, who has been unduly flattered, is led, so to speak, by silken cords into a merry company of his supposedly good friends, and offered, among other things, a cup of very good coffee. While the conversation is at its height his attention is distracted for some moments, during which critical period a sufficient dose of datura is surreptitiously placed in his cup. The guest of honor drinks the coffee and even though he may remark that there are considerable grounds at the bottom of the cup, his friends readily assure him that even good coffee has grounds. After a short space of time, he experiences considerable vertigo, his speech becomes incoherent, his steps uncertain. One idea possesses him: to find at once the place where is hidden his treasure. Staggering and tottering, he manages to reach the goal and, when arrived, at once scratches up the earth with his nails. His friends sympathetically interfere, and directly in full possession of the treasure, divide it with great fairness. After the looting, no further attention is paid to the victim; and when he recovers, a very fortunate mental condition, so far as the conspirators are concerned, obtains, for there is no recollection on his part of what has occurred.

ORIGINAL ARTICLES.

THE CAUSATION AND TREATMENT OF INFANTILE CONVULSIONS.

By E. W. SAUNDERS, M. D., of St. Louis.

As we are dealing not with a morbid entity, but with a symptom complex, I will ask permission to ignore the usual classification of factors into predisposing and exciting, etiologic and pathogenic, and to adopt a simple didactic and clinic nomenclature.

I.

CENTRAL CAUSES.

1. Gross lesions of the brain or meninges, morbid or mechanical, congenital or acquired.
2. Concussion—commotio cerebri.
3. Sudden changes of pressure in the blood or cerebro-spinal fluid.

II.

CENTRIPETAL CAUSES.

1. Reflex.
2. Psychomotor.

III.

DYSTROPHIES AND INANITION.

1. Rickets—Tetany.
2. Acute and chronic cerebral inanition.

IV.

HEREDITARY, OR CONGENITAL (INORGANIC) CAUSES.

1. Similar or dissimilar heredity.
2. Prematurity, congenital debility.

V.

INTOXICATION.

The whole list of drugs and poisons, including food-poisons, credited with spasmogenic power, (CO_2 and acetone excepted). Some of them, such as alcohol, may be imbibed with the breast milk.

VI.

INTOXINATION.

The specific toxins of acute infectious diseases, including those of organisms, like the colon bacillus, which sometimes become parasitic.

VII.

PYREXIA.

1. From toxins.
2. From reflex irritation.
3. From heat-stroke.

VIII.

AUTOINTOXICATION.

1. From gastrointestinal disturbance.
2. From hepatic insufficiency.
3. From disturbance of the internal secretions.
4. From renal insufficiency.
5. From pulmonary and cutaneous insufficiency.

IX.

MATERNAL AUTOINTOXICATION.

1. Puerperal eclampsia.
2. Violent emotion shortly before nursing.

X.

1. Asphyxia.
2. Whooping cough.
3. Thymic asthma.

XI.

SPASMOPHILIA.

XII.

ECLAMPSIA OF THE NEW-BORN (requires a separate consideration).

Before taking up the foregoing in detail, it would be well to consider the defenses of the organism against the malign influences which are operative in the subject under consideration. Disease is defined as "the reaction of cells to noxious influences." The body cells are guarded from the approach of the enemy by a quadruple line of defenses.

I. The digestive ferments, and the transforming power of the gastro intestinal mucosa, bathed in these secretions, supplemented by the phagocytic power of the leucocytes, which swarm in the mucosa during digestion.

II. The toxicolytic function of the liver.

III. The toxicolytic function of the ductless glands, the pituitary, the adrenal, the thyroparathyroid, and the thymus.

IV. The eliminative function of the kidneys, intestines, skin, lungs and salivary glands.

The digestive ferments have toxicolytic power in the order named: 1st, the pancreatic juice, 2nd, the saliva, 3rd, the gastric juice. This power, however, is not supreme, and in some instances, avails nothing, as in the case of cobravénom, which is a toxalbumose.

The cells of the mucosa habitually convert poisonous intermediary products of digestion into pabulum for the tissues. If they are destroyed by ulceration, or thrown off in great quantities as in choleraic diarrhœa, this line of defense is gone, and not only do all manner of toxic substances, peptones and toxines, enter the circulation, but also bacteria may freely penetrate the wall.

Von Behring has shown that permeability is normally characteristic of the intestinal mucosa for the first quarter of infant life. The integrity of the digestive functions is essential for the preservation of the normal "digestion leucocytosis," which is in evidence in the whole circulation, but pre-eminently in the intestinal wall. The role of the leucocytes in attacking invading cells, is well known, and they even segregate arsenic, for instance, in arsenical poisoning.

The liver, along with its other functions, combines that of rendering toxic agencies less noxious. It is estimated that it normally reduces the toxicity of the blood brought to it by one-third, and by how much more in disease, has not been determined.

Animal and vegetable alkaloids are peculiarly subject to its reducing action. Ammonia is there synthetized to harmless urea. A striking example of its reducing power is given by guaiacol. Administered internally, it is not possible to obtain a striking antipyretic effect in fever, but fifteen or twenty drops absorbed by the skin, gives an immediate and powerful effect, notably in the pyrexia of tuberculosis, pneumonia and typhoid fever.

The ductless glands are now credited by all investigators with playing a leading part, not only in the normal metabolism of the body, but in its defense in time of war. Even the little-understood thymus is believed to be charged with the duty of reducing catabolic poisons in the blood during foetal life. Up to the present time the deplorable fact remains that we do not sufficiently understand their reciprocal functional relations and their combined effect upon the organism, and the changes of function produced by disease, much less how to meet these changes. Sajous, for instance, claims (on what evidence it does not appear) that at the moment of a convulsive seizure there is an enormous hypersecretion, whereas there was a hyposecretion precedent to the attack.

The emunctories of the body constitute the line of defense which we best understand and over which we have the most control. Of this we will speak more fully under the head of treatment.

In considering the central causes of convulsions we should not only think of severe traumatism, hemorrhage, tumor, thrombosis, abscess, meningitis, obvious hydrocephalus, but also of such conditions as concussion, congestion, anaemia, initial hydrocephalus, or transitory change in the amount of cerebrospinal fluid.

A baby two years of age fell from the window sill upon the crown of the head, and had a convulsion. She speedily returned to a normal condition and seemed to be none the worse for her experience. After a few weeks, convulsions returned, and she gradually developed a confirmed epilepsy.

Sudden congestion of the brain occurs in fever and in asphyxia, and no doubt contributes to the occurrence of eclampsia. I have observed in a case of apparent death due to post-diphtheritic heart failure, that on the return of the pulse, after artificial respiration, there would occur mild convulsive movements of the muscles of the face and extremities, due to the sudden return of the blood pressure. Immediately after lumbar puncture in a case of prolonged convulsive seizures, I noticed that the attacks became more severe and continuous. In the hydrocephalus of early infant life, every rise of pressure is marked by a series of convulsions, and a subsidence of fluid brings on abatement.

It is possible that some of the cases of convulsions in the beginning of rickets, not characterized by laryngospasm and other marks of tetany, may be due, to a minor degree of hydrocephalus.

Under the head of centripetal causes come the various reflexes that have been brought forward as capable of producing eclampsia: phimosis, dentition, intestinal parasites, foreign bodies, indigestible food, or excessive amounts of food, otitis, calculus, strangulation of intestine, undescended testicle, are all credited with spasmogenic power, on good authority.

It is surprising to see the amount of acrimony injected into the discussion of dentition as a pathogenic agent, especially by the Vienna school. The plea that it is physiological applies with equal force to adherent prepuce. In a case seen with Dr. W. L. Johnson, convulsions occurred for the first time accompanied by high fever and double otitis. In spite of all treatment, they persisted, after subsidence of fever and healing of the ears, and only ceased after circumcision. He reports two other cases in which there has not been a return since the operation.

Rachford truly states that a nagging reflex may cause high fever, and even degenerative changes in the central nervous system. Jesse Myer has made some very enlightening discoveries in relation to the occurrence of "intestinal sand" after the ingestion of bananas. He finds that it is due to the gum resin and tannin of the tubules. He has requested me to ascertain, if possible, whether the occurrence of convulsions in children after eating bananas may be due to the irritation of this sand. It is possible, although the child has usually gorged itself with the fruit, without a semblance of mastication.

Under the head of centripetal causes comes also the small group due to sudden fright or rage. I have seen a single convulsion occur from the use of the thermometer (no anal fissure). Sometimes a child of uncontrollable temper loses its breath, and has a slight, or severe general convulsion. This recurs so often that it becomes a habit. I would suggest the term "Orgilospasm" for this well defined group of cases. In the few which I have seen there was no sign of tetany.

Heredity is a well known factor in the etiology of eclampsia. Every member of a large family has been known to be subject to it. Sometimes the neuropathic diathesis in the ancestors is dissimilar. Drunkenness is peculiarly prone to be transmitted into convulsions, resulting in epilepsy.

It would be interesting to know whether prematurity contributes, to any appreciable extent, to the occurrence of eclampsia. I have in mind a very neurotic mother who lost her first two children in difficult labor, and was delivered of the next two at eight months. They both died of convulsions under one year of age, the one in the course of whooping cough, and the other in the initial fever of measles.

Tetany and rickets seem to be almost synonymous in the treatment of this subject. The general weakness and smallness of the cartilages may affect the structure of the larynx, and be in part responsible for the laryngospasm. If the convulsion is inaugurated with a crowing sound, we may at once divine the nature of the case. It is well to remember that the list of drugs capable of producing convulsions in infants is a long one. Balsam of Peru applied to the nipple has produced them in the nursling. Likewise diachylon ointment, and acëtanilid applied to the umbilicus. Phenacetine and antipyrin have caused severe cutaneous eruption with eclampsia. Carbonic acid gas and acetone are universally credited with this power, but on no adequate evidence. Acetone is feebly anæsthetic and not convulsivant. CO_2 is nature's anæsthetic. Physiology teaches that CO_2 poisoning, slowly induced, ends in coma and not in convulsions. If, however, the supply of oxygen be rapidly cut off, convulsions occur. The significance of this fact will be brought out later. The Germans are particularly insistent that alcohol should not be allowed to the nursing woman. I would remark in passing that Bunge attributes the failure of modern women to nurse their infants largely to this cause. Intoxination is a convenient word coined by Combé, the meaning of which is apparent. At first sight it might seem useless to distinguish between this and pyrexia as causative agents. But I wish here to make a point. Just as it is unscientific to credit CO_2 and acetone with spasmogenic power, when all the evidence is to the contrary, so I hold that no toxine should be listed as a cause of convulsions, until it is proved that it, and nothing else, is the guilty party. The toxine of tetanus is undoubtedly spasmogenic, but the unknown toxine of measles would seem to be soporific. That the sudden onset of measles is sometimes accompanied by convulsions, is capable of quite another interpretation.

Of all the factors entering into the causation of eclampsia, initial pyrexia seems to be the most prolific and the most dangerous. This is, no doubt, largely due to the fact that the infections which give rise to fever with convulsions, are more or less virulent, but pyrexia due to heat stroke with no exogenous infection is even more fatal. However, one fact strikes us as very singular in this connection, namely, that the convulsions in the vast majority of cases are initial only. If the child comes out victorious in the contest, after a day or two, there is no tendency to return, even though the high temperature may continue for a long time. A recurrence late in the course of the infection almost invariably means death, due to organic changes in the kidneys and other organs.

If then the specific toxins, most of them, cannot be credited with direct spasmogenic power, and if fever has not that power throughout the whole course of the infection, it behooves us to search for some other link in the chain of causes. We find it in the wide domain of autointoxication.

In advanced organic disease of the kidney, we see the clearest type of convulsions due to retention-toxicosis. Likewise in the onset of fever we have all the conditions requisite to autotoxemia—dry skin, dry mucous membranes, suppression of oral and gastrointestinal secretions, renal insufficiency, hepatic insufficiency, and most probably disturbance of the function of the ductless glands. The urine first voided may be colorless and of very low specific gravity, as low as 1002; the next contains urates in abundance. The specific gravity, registering the output of solids, furnishes a good index of the progress of the retention-toxicosis toward recovery.

These initial convulsions more often come on during sleep, and this reminds us of the fact that epilepsy in its first manifestations nearly always begins in the early hours of the morning. In sleep during the first stages of fever the temperature rises and the respiration becomes much more rapid.

Bouchard's theory was that the normal catabolic products of the tissues during sleep were spasmogenic, whilst those of the waking hours were soporific. Certain it is that sleep is apt to bring on convulsions, where the conditions are ripe for their occurrence.

Whilst the urine betrays an hepatic insufficiency, it is impossible in the present state of our knowledge, to know just what the ductless glands are doing in initial high fever. Shaw says (not referring, however, to febrile diseases) "it is possible that some cases of infantile convulsions are due to disturbances of the child's thyro-parathyroidal apparatus or possibly, in the case of children at the breast, to disturbance of the same tissues in the mother."

Sajous believes that the internal secretions are the most important agents in oxidation. Howland and Richards have proved that the toxicity of indol is due to suboxidation.

Whilst positive proof is yet lacking, it would seem that the presumptive evidence is in favor of supposing an autotoxemia, due both to faulty metabolism and to retention-toxicosis, to be the immediate cause of the initial convulsions of acute febrile infections.

Primary gastrointestinal derangements are a prolific source of eclampsia. There are so many possible causes operative here, that we cannot refer all cases to any one cause. One may be purely reflex, as was that of a baby who had one convulsion, then passed a piece of cotton string, and was perfectly well. Another may be due to failure of primary digestion. Such was the case of a child who became eclamptic in the second year and had convulsions more and more frequently until it was evident that he was a confirmed epileptic. The most noted neurologists had abandoned the case, and the mother sought the advice of some one who prescribed taka-diastase. The seizures, which had been numerous every day, ceased for several years. However, the boy had already become imbecile and the epilepsy returned.

Rachford mentions cases of petit mal due to intestinal autointoxication. We should carefully search for digestive idiosyncrasies.

In acute gastrointestinal infection with high temperature, we have a combination similar to that which may obtain in any acute infection. If a child be overtaken by scarlet fever, for instance, with an overloaded intestinal tract, his chances of having convulsions are vastly greater.

Convulsions of the new-born, due to a transmitted toxicosis from an eclamptic mother, furnish another interesting example of the power of autotoxemia. The milk of an enraged mother has produced fatal convulsions. Whether we have to do here simply with perverted internal secretions, or with these and imperfectly reduced catabolic poisons, perhaps as a consequence, or with a toxalbumin, remains to be discovered.

Asphyxia, like cerebral hæmorrhage, is both a cause and an effect of convulsions. The laryngospasm of tetany and of whooping cough is frequently responsible for an eclamptic seizure. When this has once taken place it is very apt to recur at frequent intervals.

An enlarged thymus is sometimes responsible for most unexpected and primarily fatal convulsions, as reported by Holt, Baginsky, Kerley and others.

The convulsions of whooping cough present a mysterious mortality. There are two modes of onset, the one clearly cerebral from the first; the other asphyxial. The first group presents the following symptoms: stupor, diminished intensity of the paroxysms, slow, shallow and irregular breathing, slight fever. The case always goes on to a fatal termination; hydrocephalus may develop, or there may be a simple meningitis. In the second class of cases intubation should be done, although the results are often disappointing.

The term spasmophilia is reserved for the neurologists, and under this heading we would place all cases which we fail to locate elsewhere. A "physiologic spasmophilia" explains nothing for the clinician and has

only an academic interest. A "pathologic spasmophilia" should enable us to place the case under its appropriate head.

Eclampsia of the new-born is said by some writers to be rare, and by others, to differ so much in its manifestations as not to be recognized. Rachford says that the undeveloped state of the pyramidal tracts accounts for the infrequency, but this may also account for the feebleness of the seizures. As Hochssinger says, they are more sustained and tetanic in character.

TREATMENT. I must confess that I am profoundly dissatisfied with the results of the routine emergency treatment of infantile eclampsia. The hot bath I discarded long ago, and I am not at all sure that chloroform is an unmixed blessing. In reference to the first, authorities are divided, whilst the second is acknowledged to be without effect in many cases. Holt has found oxygen inhalation successful where all else had failed. In primary laryngospastic eclampsia all treatment by inhalation is useless for the time being and in all severe cases the function of respiration is seriously compromised.

Death by asphyxia is the most imminent danger, and as we have learned from physiology, the more rapidly and completely oxygen is withdrawn, the more tetanized the system becomes. It is to be hoped that Holt's suggestion may lead to the trial of oxygen as a routine treatment in the place of chloroform.

Prolonged suboxidation may be an underlying fault in many cases—in whooping cough, for instance, it may account for the peculiar persistence and fatality even after intubation.

Morphine as an antispasmodic is certainly more effective than chloroform, and as Holt says, only those object to its use who have never tried it.

To the hot bath there are several objections. In the first place, a large number of cases of emergency convulsions occur with fever. Hyperpyrexia is most to be dreaded. I know of two cases dying in the bath; one with a temperature of 109° and another of 111°. Heat to the spinal column and back of the head is a motor excitant, never a sedative. It is not possible to put a child in convulsions into the bath except in such a way as to immerse the spine. This position is most disadvantageous for dealing with the asphyxia. The abundant mucous secretion and often vomited matter, are retained over the larynx and can only be gotten rid of by placing the child with the face down.

The cool pack has none of these objections. In non-febrile cases, the pack should be warm.

In the treatment of cases due to rickets the phosphates with appropriate diet and hygiene certainly do good. Phosphorus in oil I have never tried, believing with Trousseau that "it is a poison and no medicine." Holt has not been persuaded of its utility, after a fair trial. Bromides and chloral are safe and useful as antispasmodics. Veratrum viride is especially indicated in acute infections; it has the double ad-

vantage of being a spinal sedative in addition to its utility in febrile conditions.

In conclusion I would urge that we go in search of the precise and immediate causative agent or agents responsible for the production of the most common form of infantile eclampsia,—the Initial Pyrexia, and having found them, direct our therapeutics accordingly. The fine work done by Williams in fastening the guilt of hyperemesis gravidarum upon the liver for failure in its synthesis of ammonia, and that of Howland and Richards in relation to indol and its rôle in recurrent vomiting of children, may well encourage us and serve as guiding stars in our quest. Neurin has been thought by Donath to be the autogenetic poison responsible for epilepsy. Suboxidation is certainly an obvious condition present in a large number of cases.

"AUTOMOBILE FRACTURES."

By SIDNEY LANGE, M. D., of Cincinnati, Ohio.
Radiographer to the Cincinnati Hospital.

The "automobile" fracture is a fracture of the lower outer tip of the radius (the radial styloid) produced by the recoil (so-called "back-kick") of an automobile crank. The etiologic, anatomic and clinical features of this fracture are so strikingly characteristic as to justify a separate classification and terminology for it.

The four following cases, which were referred to me for x-ray examination, may be regarded as typical:

Case 1.—Rev. P. M., while cranking his automobile, was struck sharply upon the palm of the right hand by the recoiling crank handle. There was considerable pain to the outer side of the wrist following the injury but little disturbance of function and no swelling or discoloration. Therefore the arm was neither splinted nor bandaged. The fact, however, that certain movements of the wrist were painful, caused the patient to seek medical attention several days later.

Upon physical examination there was neither swelling, discoloration, deformity or crepitus to be obtained. Gentle limited movements of the wrist could be made, but forced movements caused pain to the outer side of the wrist. There was a distinct point of tenderness over the outer side of the radius, about one-half inch above the radial styloid.

An x-ray examination (antero-posterior view) showed a fracture of the lower outer corner of the radius, the line of fracture running obliquely from one-half inch above the radial styloid to the articular (carpal) surface of the radius, releasing a triangular fragment, which, however, remained in perfect apposition with the rest of the bone. Upon taking a lateral view, it was noted that there was absolutely no forward or backward displacement of this fragment; indeed it was difficult upon this view to detect the presence of the break. The discovery of this fracture was much of a surprise to both physician and patient.

Case 2.—Mr. C. V. B. While the patient was cranking his automobile, the "back-kick" of the cylinder suddenly jerked the crank out of his hand giving his wrist, according to the patient's statement, a severe twist, after which he was conscious of considerable pain to the outer side of the wrist, which increased upon moving same.

Physical examination showed little swelling and no redness or discoloration. Crepitus could not be obtained. All movements of the wrist except the most limited were painful, the pain being referred to the outer side of the wrist, while one-half inch above the radial styloid was a point of tenderness. It was this point of tenderness that suggested the advisability of an x-ray examination.

The skiagram revealed almost the identical conditions as outlined in Case 1. There was a line of fracture through the right radial stylus separating a triangular piece of bone from the lower end of the radius, but the apposition was so perfect that the line of fracture was in places, indistinct, and it was only by the closest scrutiny of the x-ray plate, and comparison with the uninjured wrist, that the presence of the fracture was definitely determined. A lateral view showed no forward or backward displacement.

Case 3.—Dr. C. R. H. While cranking his automobile was struck upon the right palm by the recoiling crank-handle. The wrist became swollen,



FIG. 1.

Lateral and Antero-Posterior Views of the Automobile Fracture.

all movements painful, with point of tenderness over the outer side of the radius, about one-half inch above the stylus. There was practically no deformity.

The skiagram showed a fracture of the radial stylus similar to Cases 1 and 2, with the exception that the broken fragment was of oblong shape rather than triangular. A lateral view showed practically no backward displacement.

Case 4.—Mr. H. D. B. This case was practically identical with Case 2 in etiology and x-ray findings.

There are certain features connected with the above cited so-called "automobile fractures," that distinguish them from the familiar Colles' fracture and put them in a class by themselves.

The automobile fracture is produced by indirect trauma to the lower end of the forearm, and because of the position assumed in cranking, the trauma is always expended upon the outer side of the arm, namely upon the radius. The right arm is always involved, unless the patient be left handed.

There is practically no separation of fragments on this type of fracture and as a result there is practically no deformity. This close apposition of fragments, together with the fact that crepitus is very difficult or impossible to elicit, makes it more than probable that the automobile fracture is a subperiosteal one. When we consider the nature of the force producing this fracture it is readily conceivable that the resulting crack might very well be subperiosteal.

There is but one clinical sign of this fracture, namely point tenderness above the radial styloid. The swelling is slight and discoloration is

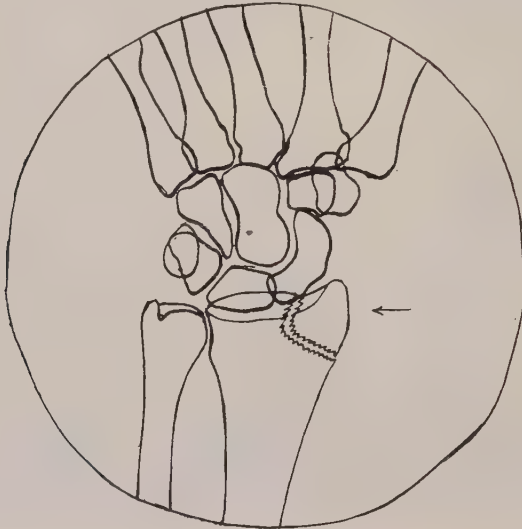


FIG. 2.

Outline sketch made from Fig. 1.

absent. There is no deformity, and crepitus is often impossible to obtain, while the disturbance to the functions of the wrist may be surprisingly slight.

Comparing the automobile fracture with Colles' fracture, we find the following points of difference: Colles' fracture usually follows a fall upon the extended hand; it is not subperiosteal; it is accompanied by much deformity and crepitus can (except in the impacted varieties) be easily obtained, while loss of function of the wrist is usually complete. Furthermore, in Colles' fracture the x-ray usually shows the line of break to be more or less transverse across the lower end of the radius, with *backward displacement* of the lower fragment, and very frequently a concomitant tearing off of the ulnar styloid.

By exercising care in cranking, this accident may be avoided. The object of the cranking is to compress the gasoline in the cylinder preparatory to its ignition. The explosion should not occur until the piston has reached the end of the cylinder. When the engine starts in the right direction, that is in the direction in which the crank is being turned, the crank is automatically released and remains motionless. But if the explosion occurs too soon, before the piston passes the center of the cylinder, the engine reverses itself and the crank does not release itself but revolves with the engine, producing the "back-kick."

If the reversal occurs on the up stroke of the crank, the handle will be jerked out of the hand and do no harm, unless possibly it should strike the knuckles after making a complete revolution. But if the reversal occurs on the down stroke of the crank, that is, while the hand is making a downward pressure upon the handle, the force of the back-kick is expended upon the radial half of the palm resulting in the automobile fracture.

To avoid this accident the cranking should always be done upon the up-stroke. If the engine fails to start after the first up-stroke the handle should be *readjusted* for the next trial. To guard against premature explosions, the sparker should be retarded which prevents ignition from occurring until the piston has reached the end of the cylinder.

HOW LONG SHOULD THE WOMAN REMAIN IN BED AFTER
NORMAL LABOR?

By FRANK HINCHEY, M. D., of St. Louis.

With the exception of the heresies which have arisen in the ranks of the German obstetricians, since the publication of Küstner's¹ paper in 1899, there is probably no subject, in the entire history of medicine, concerning which there has been such constant unanimity of belief as relates to the prolonged rest in bed after labor. When we find, in a science which has undergone so much of radical and endless change, such a fixed belief or law, we naturally suppose any departure from its observance must be fraught with death or at least proper physical punishment. Indeed most of us strongly incline to this belief, and, upon hearing of a rash woman arising before the accepted time, concur in the opinion that she will eventually "suffer for it." But does she suffer a penalty? Do we not base our prediction on the histories of patients who have arisen thus early after a confinement attended by lacerations or infections? Viewing the subject through pathological glasses, we do not consider that there may be many others who have arisen just as early, and, after a perfectly normal confinement, have never had occasion to consult a physician. I am not referring to wives of savages, nor to women accustomed to working in the fields, nor to women who have long been markedly neurotic or neurasthenic, but to the women we meet in the average practice.

It is my custom to permit the women whom I deliver to remain in bed the usually allotted time, for, where professional opinion is so unanimous, I have assured myself that such opinion must be altered ere the laity can be expected to favor an innovation so radical. For like reason, until the experimental stage has been passed, we have not advised any such practice in the Maternity Hospital. But during the past few years I have delivered eight women (one in two confinements), who were permitted to arise on the third or fourth day, and this paper is an effort to explain why these women remain in perfect health. References to reports in the literature are omitted because that portion of the subject will be thoroughly considered by another writer in this discussion.

None of the cases considered in this paper were attended by laceration of the perineum. Such a condition would necessarily demand a prolonged rest in bed.

In considering this subject of early rising it would seem that we must have clear-cut ideas, and should have convincing arguments in disputing any claims of advantage for such a measure. In the treatment of most medical and surgical affections great disparity of opinion may well

obtain, since we are so often at a loss to determine the extent or intensity of the infection and the resisting capabilities of the patient. But in a consideration of this question we have not such unknown quantities; instead we have physical forces obeying well-known physical and physiological laws. We can observe and compare results, thus reaching conclusions which will enable us to forget our prejudices and place our theories of treatment on a scientific basis.

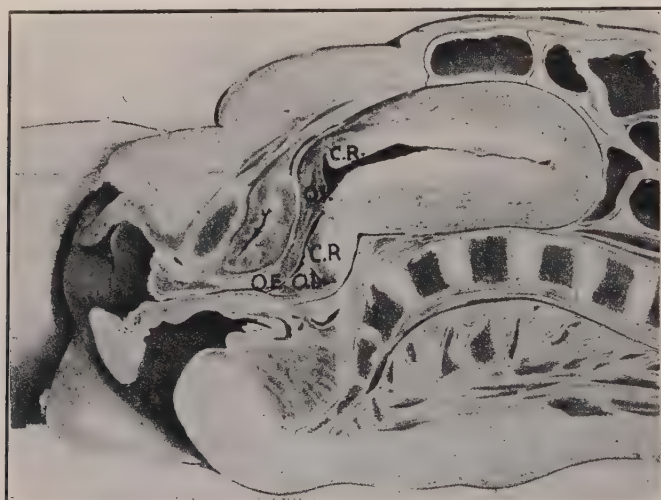
We will then consider, as briefly as possible, the following advantages claimed for the rest in bed of ten days to two or more weeks, for the average woman after normal labor, contrasting therewith some advantages of early rising:

1. To permit of a proper amount of involution of the uterus, thus obviating the danger of its displacement.
2. To permit of a proper amount of involution of the uterine ligaments and of the pelvic floor.
3. To prevent hemorrhage and embolism.
4. To prevent infection and to permit her to recover from the nervous shock and the strain to her entire system. Taking up these points seriatim:

1. *Favoring uterine involution:* After the third stage and after the primary contractions have produced the ball-like shape of the uterus, that organ assumes a flattened condition, lying upon the lumbar vertebrae. The elongated cervical lips rapidly retract to the upper portion of the vaginal canal. By the fifth day, in most cases, the intestines lie upon the uterus, crowding lower each succeeding day until, by the tenth or twelfth day, the fundus has reached the pelvic brim. At this time the patient is permitted to leave her bed. With the woman on her side or back (for she will rarely remain on her side) let us see how involution has progressed and how successfully we have prevented displacements. That involution is very defective and retropositions are common we must admit, since all writers urge the necessity of examination before dismissing the patient for the detection of such conditions; and further urge the use of glycerine tampons and pessaries to supplement nature's efforts, that the woman may not remain an invalid. B. C. Hirst² in a careful record of 6000 gynecologic cases classifies over one-third of them as due to puerperal conditions, with retropositions. Maury,³ in the Presidential Address, American Gyn. Society, 1906, says "75 per cent. of backward displacements are due to childbirth." To my mind these conditions are due to the fact that uniform involution of all parts of the organ is not possible, with the uterus in the above described position, for the reason that the normal curve of the cervico-uterine canal is distorted, causing unequal circulation, with the result to be shown presently, of unusual anemia in one portion of the uterus and with venous and lymph stasis in another portion. The fundus rests upon the lumbar vertebrae while the lower uterine segment remains in the pelvis, in consequence of which the posterior area of that segment is folded upon

itself, while the anterior area is stretched by the traction of the fundus in its new position. This is well shown in the accompanying figure, which is from a frozen section, after Benckiser.

Uterine involution is due to atrophy of muscle fibres, following a lessened blood supply. This is conceded to be a fact since the researches of Sanger and of Dietrich. The pathologic stretching of the anterior, lower area of the uterus increases the normal anemia of the parts and thereby hastens involution, but the weight of the distorted fundus will not permit atrophy of the fibres in their normal relations, in consequence of which these anterior areas remain elongated. The pressure and gentle massage of the intestines and bladder on this anterior portion also hasten involution; while, at the same time, involution and atrophy of the posterior areas cannot be synchronous with that of the anterior, because of the reversed relation of the blood and lymph vessels, consequent upon the abnormal position of the uterus. This stasis may



Frozen section (Benckiser) after completion of labor. Note elongation of anterior area of lower uterine segment and folded posterior area.

O. E., external os; O. I., internal os; C. R., contraction ring.

permanently prevent complete involution, or if atrophy does occur the posterior fibres, not being subjected to traction, become shorter than the anterior, thus producing the retropositions. If now we permitted the uterus to assume its normal position early in the puerperium, with its anterior wall supported by the pubes and abdominal muscles and raised at times by the bladder, and with its posterior wall pressed upon by the intestines, the normal curve of the cervico-uterine canal would be maintained, affording free drainage of lochia and clots, thus lessening the danger of infection; and, at the same time, involution must be uniform, because the factors which produce subinvolution and retro-displacements cannot obtain.

It must be borne in mind that the human is the only mammal whose accepted conduct of the puerperium does not permit of normal uterine drainage and involution by posture.

2. *Involution of the uterine ligaments and of the pelvic floor:* We continue to hear of the ligaments as supports of the uterus, though not to the extent formerly observed. I believe we should regard only two structures as of consequence in maintaining the position of the uterus, aside from the support afforded by the pelvic floor. These structures are the ligamentum transversale colli of Mackenrodt and, to a less extent, the utero-sacral ligament, which contains much connective tissue and muscular fibres. The round ligaments are vestigial structures in the human being, and of real consequence only in the pregnant condition when they perhaps often prevent torsion of the uterus. Their true function is found in the pregnant quadruped, when they hypertrophy greatly and prevent forward "pitching" or torsion of the uterus, as the animal runs or leaps. They never atrophy sufficiently after pregnancy to draw the uterus forward, and, even in the unimpregnated, normal uterus, their insertion in the abdominal wall is anterior to their uterine origin, as recently emphasized by Fothergill. They are certainly never capable of drawing forward a retro-posed uterus, or even of maintaining it in proper position, after all our shortening operations of these ligaments, if the pelvic floor is inadequate. The ligamentum transversale colli with perhaps the utero-sacral ligaments are, as stated, of great importance, but I do not agree with Fothergill,⁴ who has recently studied the subject extensively and declared that support of the pelvic viscera depends wholly upon the integrity of the so-called ligamentum transversale colli—rather do I believe Paramore⁵ has the better of the argument when he asserts that this structure is of great importance only while the pelvic floor contributes its share of support. The subject is of much interest, but, since we are not considering the torn perineum, its final decision is not essential at this time. A point of value is that these structures (the lig. tr. colli and utero-sacral ligs.) do not stretch, to a marked extent, during delivery; rather are they compressed against the pelvic walls. If they were capable of great stretching the uterus would very often be forced from the pelvis during erroneous application of Crede's method. In delivery these structures constitute the only fixed point of the uterus, and, to my mind, their attachments undoubtedly aid the retraction of the dilated os over the fetal head, and also prevent any violent abdominal-muscle contractions from forcing the uterus out of the pelvis, before dilatation of the cervix, as might occur were they composed of "loose areolar tissue," as stated by some writers.

Concerning the pelvic floor: The woman is kept in bed to permit involution of the muscles of this region that they may well sustain the pelvic viscera, when she leaves the bed at the usual time, and, it is argued, if strain were put on these muscles by early rising it would cause them to remain permanently stretched and inefficient. I have ex-

amined these structures daily, after the second day, to determine this point, and, with the woman in the standing posture, find there is no marked tension; indeed the condition is similar to that before delivery for the reason that in these early days the weight of the uterus is borne by the abdominal wall and pubis. The cervix remains well up in the pelvis, and the hypertrophied perineal muscles are capable of contracting quite firmly on the examining fingers. A very important consideration concerning early rising is that these muscular structures are called upon to exercise their normal functions, and, in response thereto, their action promotes speedy involution with return of tonicity; so that, by the time the uterus has reached the pelvis, they are capable of affording efficient support. In none of my cases did the woman complain of the sense of weakness in the perineal region, which I have commonly noted in women who have had an abundance of rest and no exercise of these muscles. In short our prolonged rest has really favored a retroposition of the uterus, and, at the same time, we have enhanced the chance of a prolapsus, by preventing rapid return of tone to the stretched and congested muscles of the pelvic floor.

3. *To prevent hemorrhage and embolism:* At the first thought prolonged rest seems a real advantage in the avoidance of sudden death from embolism. There can be no danger from hemorrhage after the first day, following a normal labor. We know very little of the causation of embolism, but according to current ideas on the subject there seems to be nothing unfavorable to early rising. On the contrary, the chief factors in the production of embolism, according to Frazier,⁶ are (a) infection which we can avoid in normal labor; and (b) "retardation of the blood current in the presence of an altered condition of the blood serum." We have always known that, during the puerperium, the pulse becomes slower and the blood pressure lessens. Williams, after quoting the opinions of many observers, agrees with Fritch that this is due to the horizontal position, with absolute rest and consequent diminution of work. Boise⁷ in an extensive review of the subject of post-operative thrombosis and embolism, says "some surgeons believe that when the musculature of the heart is in process of degeneration heart-clot is more probable if the patient remains quietly in bed; because, the contractions of the heart being less vigorous, the ventricles are never completely emptied, and the residual blood is prone to coagulation." Also that this danger is to a certain extent averted by stronger and more complete contractions, induced by the upright posture and physical exertion." I have found no report of any case occurring among the women who have been permitted to arise early in the puerperium. Were this a real danger we should hear of many cases, for we know the poorer classes have no knowledge of the modern bed-pan and commonly suit their own pleasure about resuming household duties. Edgar⁸ says he has histories of 20,000 to 30,000 cases from three out-services in tenements, with the patients arising to urinate, defecate and get to work early, de-

spite efforts of detention; yet no case of sudden death can be attributed to this getting up. From the histories of Perkins'⁹ cases of sudden death in pregnancy, none can be ascribed to embolism, as we are now considering it. It seems reasonable to assert that, in as much as no cases of death from hemorrhage or embolism have occurred on account of early rising, and as there are even no good theoretical reasons for fearing such an accident, the subject may be dismissed until we have cause for alarm.

4. *To prevent infection and to afford time for recovery of health.* The parturient canal in any position of the body is closed from extraneous infection. When the patient is lying down the vaginal outlet is higher than the cervix, favoring retention of lochia and clots, which the usual sagging of the bed augments, so that, if our delivery has not been aseptic, the development of infection is really favored, because of the absence of good drainage.

Concerning rest: The normal woman usually expresses a desire to "get up" on the third or fourth day, feeling sufficiently rested and having a return of appetite. By prolonged rest the appetite wanes, pulse and heart action lessen markedly, constipation, malaise and languor ensue, as occurs in all individuals from lack of accustomed exercise. General metabolism is impaired to such an extent that, as a result of her "rest," she requires a few weeks longer for convalescence. The demands of lactation call for healthy conditions of all organs of the body, and if the respiratory organs, the vascular organs, the digestive and secretory organs are impaired, as they must be, by the sudden arrest of accustomed physical exertions there must in turn be a delay in the prompt establishment of lactation, for the inhibition of all vital activity must have a like effect in deferring or lessening the lacteal secretion. It may be said that general massage should be practiced, in order that the rest may be most beneficial and to get the effect of exercise without the fatigue. But we know that no massage or passive movements can produce the effect of normal muscular activity—nothing can produce the same tonic effect upon the vascular system as deep respirations. Then, too, the average woman cannot well afford such dubious luxury. Dubious, indeed, for the efforts of the general nurse in performing massage are more provocative of mirth than of a generous flow of lymph and blood.

From the careful observation of a few cases and my study of the subject, I believe the following conclusions are justifiable:

1. Early rising is beneficial because the lying-down position reverses the normal curve of the utero-cervical canal, conducing to subinvolution and to retro-deviation of the uterus, consequent upon the inability to secure uniform anemia and atrophy of that organ.

2. In the early days after labor, there is an absence of unusual tension of the pelvic floor, in the upright posture, because the uterus rests upon the pubis.

3. Exercise favors involution of the pelvic-floor structures, so that by the time the uterus has reached the pelvis, these structures can afford the necessary aid to the internal uterine supports, thus preventing prolapsus.

4. Hemorrhage and embolism are not to be feared.

5. Early rising affords drainage which may prevent infection.

6. General metabolism is often impaired by prolonged rest to such a degree that lactation is inhibited and any tendency to invalidism is encouraged.

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THE PHYSICAL CULTURE OF THE PUERPERIUM.

By GEORGE GELLHORN, M. D., St. Louis, Mo.

Every gynecologist must needs make the observation that a large percentage of his clients date their respective ailments back to some previous confinement or miscarriage.

To determine just how large this percentage is, I have looked over the records of my last 500 private patients. From this number, 209 must be deducted because they were either unmarried girls or because they consulted me on account of their sterility, or else they came to my office because they were pregnant at the time. Of the remaining 291, I found that in 156 the causal relationship between confinement and gynecologic disease was evident. This last category comprises cases of enteroptosis, uterine displacements of acquired origin, prolapsus of the vagina, cystocele and rectocele, lacerations, endometritis post abortum, remnants of acute puerperal infections, chronic inflammatory conditions within the pelvis, puerperal cystitis, etc. Out of 291 women then, who had given birth to a child, only 135 remained well afterwards, while 156, *i. e.*, 53.6 per cent. became gynecologic patients after, and because of their confinements.

The poorer classes of the population fare still worse. In my material at the O'Fallon Dispensary where I conduct the clinic of Dr. Schwarz three times a week, I found that out of 100 patients, 34 could not be considered for this investigation because they were either sterile or pregnant, or else not yet married. Of the remaining 66 patients, confinement and lack of attention in the lying-in state had been the causative factors of disease in 42, *i. e.*, 63.6 per cent.

What do these figures tell us? They show us:

1. That the most normal and physiologic process, in fact, the very purpose of a woman's life, is, in a surprisingly large number of cases a prolific source of major and minor ailments in later life.
2. That many of these ailments are not unavoidable, but can be prevented by proper care both before and after delivery.
3. That, if the public but knew that these gynecologic diseases are in a measure caused by their obstetrical attendants, physicians would be forced to strictly observe all rules governing the puerperium.
4. That by doing so, not only the mothers but also the families, the community, the state, and the nation would be benefited in hygienic as well as in economic respects.

Medicine is just about to draw the conclusions from the wonderful achievements of the last century and to enter into the Era of Pre-

vention. Obstetrics will have its full share in this movement which promises fair to be the crowning glory of our profession.

The proper management of the puerperium must be considered from this view point of prophylaxis in order to receive the attention to which it is justly entitled. Every good text book on obstetrics will tell us that the proper management of the puerperium begins even before labor has occurred. In a wider sense the up-bringing of the female individual, the placing of her under favorable hygienic conditions, the prevention of harmful influences in childhood—they all will tend to make a woman stronger and healthier, her labors normal and easy, her puerperia freer from complications.

If however, we limit, for the present, our discussion to the management of the puerperium proper, we find that the authorities of all countries have agreed on most points governing our conduct so that the physician need not encounter any difficulty if only he be willing to live up to the approved standards.

Yet, there are several mooted questions left which to my innermost conviction equal in importance those that have already been settled. These constitute what may conveniently be termed *The Physical Culture of the Puerperium*, and comprise the following three questions:

1. How long should a puerpera remain in bed?
2. Should she wear an abdominal bandage?
3. What physical exercise does she need?

The time-honored custom has been to keep patients in bed for nine days after childbirth. Most of the large European maternity hospitals used to dismiss their patients on the ninth or eleventh day, being forced to do so by the crowded condition of their wards. That, however, nine, or even eleven days are not sufficient was indirectly admitted by the foundation, in Austria, Germany, and France, of public institutions where these young mothers could go to bed again after having been made to get up in the maternity hospitals. There are still many who adhere to the nine days' rest, very likely out of force of habit, for their argument that the uterus has receded into the pelvis behind the symphysis on the ninth day, so that the patient need no longer observe any precautions, is unquestionably unsupported by facts.

The practice of making patients get up on the first or second day after delivery, which was first advocated and carried out by Kuestner, of Breslau, radically broke with all traditions, and led us back to the primitive conditions of savage life. The wide gulf that separates the civilized, and only too often hypercivilized woman of the twentieth century from the oft-cited squaw who almost literally sheds her pap-pouses by the way side, is ignored and the custom of the Indians praised as a long-needed return to nature. Spontaneous urination, normal peristalsis, improved appetite, and increased milk supply, quick restoration of general strength, absence of embolism, and prevention of retroflexion—these are, in short, the advantages claimed for this innovation of the

hygiene of the puerperium. The new teaching found enough support so that in consequence there have been thousands of women whose lying-in state has been shortened to a remarkable degree.

But already doubts have been expressed as to the accuracy of these claims, and warning voices have been raised. Muellerheim (Trans. Obstetr. and Gynecol. Soc., Berlin, December 13, 1907) has examined more than a thousand women who were discharged from the maternity hospitals as being in perfect condition. Many of these women required weeks of rest and treatment for disturbances which had become manifest only after the patients had been dismissed from the hospitals. It may, then, be anticipated with a great deal of probability that the late condition of such patients would leave even more to be desired.

In this respect it is interesting to read of the observations of Dr. H. J. Wagener (Trans. Obstetr. and Gynecol. Soc., Berlin, December 13, 1907). This gentleman was, for ten years, body physician to one of the sultans on the Island of Java. There are one and a half million natives on this island, and they have a large number of children. Among the Javanese, an old law prescribes that a woman must get up immediately after confinement and walk about, but not yet attend to her domestic duties. Wagener knows of no country where embolism is as frequent as in Java. He also observed high degrees of anemia among these native women which affected their mammary secretion unfavorably. Furthermore, he was surprised at the enormous number of cases of prolapse, even among women of the wealthier classes who were saved all manual labor. Finally, he states that about 70 per cent of all parturient women acquire a high degree of neurasthenia after delivery because of lack of rest, and the anemia due to post-partum hemorrhage.

These observations are significant. We know from the works of Stratz and others that Javanese women belong to the most perfect specimens of womankind as far as their physique is concerned. But even these children of nature succumb to the hardships of their barbarous custom.

My own observations closely coincide with those of Wagener. When traveling in Siam more than ten years ago, I was impressed with the fact that the Siamese girls who appear so perfect physically, lose all their charms as soon as they have become mothers. I have already mentioned this in my publication: "Medizinische Reiseerinnerungen aus Siam," Deutsche Medizinische Wochenschrift, 1899, No. 9.

The average white woman, on the other hand, cannot compete with her Indian or Javanese sister as far as physical endurance is concerned. As the greater part of a city population belongs to the wage-earning classes, so belong the majority of all parturient women to these wage-earners. Look at the narrow-chested salesgirl in a department store, look at a stoop-shouldered factory girl, or a half-starved down town stenographer, and you will recognize certain types. Can you expect any

power of resistance from women who were brought up under unhygienic conditions, who live in unsanitary surroundings, who are insufficiently clothed and poorly nourished? And yet, they fare not much worse than the women of the other extreme, the wealthy women. These suffer from a life of excessive refinement which is bound to weaken the organism. Athletic girls who keep up their splendid standard of physical perfection after they are married, are few and far between. The majority lapse into an existence filled with artificialities; their food is dainty but not nourishing; their exercise is motoring; their nerves are subjected to a kaleidoscopic variety of stimulations without any relaxation.

What these women, the wealthy as well as the poor ones, need after having given birth to a child is *rest*. *They have just finished a physical task of a magnitude such as no man could undertake unless he had carefully trained himself for the work.*

The ultra-modern obstetrician, it is true, is willing to concede her one whole day of rest and perhaps a part of the second day, and still is in danger to appear rather slow and backward next to Kroenig of Freiburg, who makes his puerperae get up as early as eight hours after confinement. One feels tempted to insist that we should leave it to automobilists to exceed the speed limit.

Pregnancy and childbirth mean an upheaval in a woman's life, and now a period of rest, of absence of new demands on the different organs is required for a proper readjustment. The heart has hypertrophied during pregnancy, the kidneys have been taxed to their utmost, the blood has been flooded with toxins. Every internist in charge of a case of heart lesion or of an affection of the kidneys would enforce rest upon his patient in order to avoid an additional strain upon the weakened organs in question. The obstetrician, however, thinks he may safely ignore such precautions. It is true that the changes in the maternal organism brought about by pregnancy are still within physiologic limits, but they are so near the line that separates them from pathology that, in spite of the wonderful healing power of nature, they might easily slip beyond that line. It is also true that the advocates of rapid obstetrics, if you will pardon this expression, claim that they select their cases and permit only those to get up who are perfectly well; but it must not be forgotten that there are conditions which will become manifest only after a certain length of time. The followers of this latest teaching avow that they permit their patients only to leave the bed without walking about, much less without doing any work; but anyone who is familiar with actual conditions in daily practice must admit that such abstinence is adhered to only by a very small minority of well-to-do women who have enough help at their disposal. The overwhelming majority of women so soon as they are out of bed, must needs contribute to the running of their households.

The chief mode, then, of preventing any possible ills, is first of all prolonged rest. During this time, the circulation will be restored to normal conditions, edemas will quickly be absorbed, the involution of the uterus and the remainder of the genital organs will proceed without disturbance. Nor should the obstetrician neglect the mental aspect of the problem and weigh too lightly the psychic strain his patient has been subject to for nine long months. Here, too, a prolonged rest will serve as the best prophylaxis of mental disturbances from the mildest degrees of neurasthenia to the serious cases of puerperal mania.

It is claimed that the women, particularly of the middle and lower classes, have not the time to spend idly in bed, that they have not the means to remain dependent upon nurses for so long a time. How is it then, I wish to ask, that they *must* have both the time and the money when one of the ailments caused by a shortened and otherwise wrongly directed puerperium, *forces* them to go to a hospital later and be operated upon and stay away from their respective homes much longer than would have been necessary had they remained in bed a little longer in the first place? In fact, had they taken care of themselves a little longer, it would have consumed less time and less money in the end.

I am willing to admit that the custom of getting up too soon after confinement is so deeply rooted that the people will object to any innovation. It is true that nothing is so hard to overcome as old traditions however wrong they may be. But I am convinced that the masses can be educated if only the physicians themselves are aware of the necessity of my postulate. The history of medicine furnishes ample proof of this statement.

How long then should a patient stay in bed?

Broadly speaking, I believe that a patient should stay in bed until the muscles and fasciae of the pelvic floor and the ligaments of the uterus have regained their tonus and are able to hold the uterus, which is still enlarged and heavier than it should be, in its normal place. This condition has arrived towards the end of the third week. During this time involution of the uterus has made good progress and will, if nothing unforeseen occurs, be complete within another three weeks. During the two and a half or three weeks' rest in bed, the general organism has had sufficient time to recover completely from the strain of pregnancy and labor, and the various organs of the body have resumed their normal functions. It will, of course, be necessary to individualize in every case and to prolong the rest in bed whenever indicated. It must, however, be clearly understood that eighteen days constitute the minimum.

Prolonged rest in bed, however, is in itself not sufficient to accomplish the desired result. There are many women who remain in bed two weeks and longer after childbirth and yet have flabby abdominal walls. We must, therefore, resort to additional means in order to strengthen the musculature of the abdomen.

Immediately after labor, the abdomen of the puerpera is flattened from before backward and, in a general way, presents a picture which

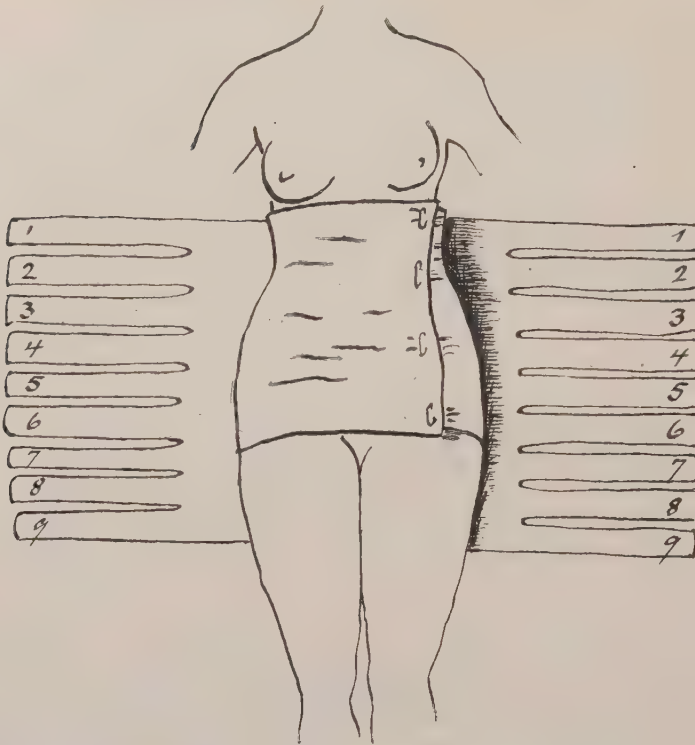


Fig. 1.—Abdominal Bandage for the Lying-in State.
(After Semmelink.)

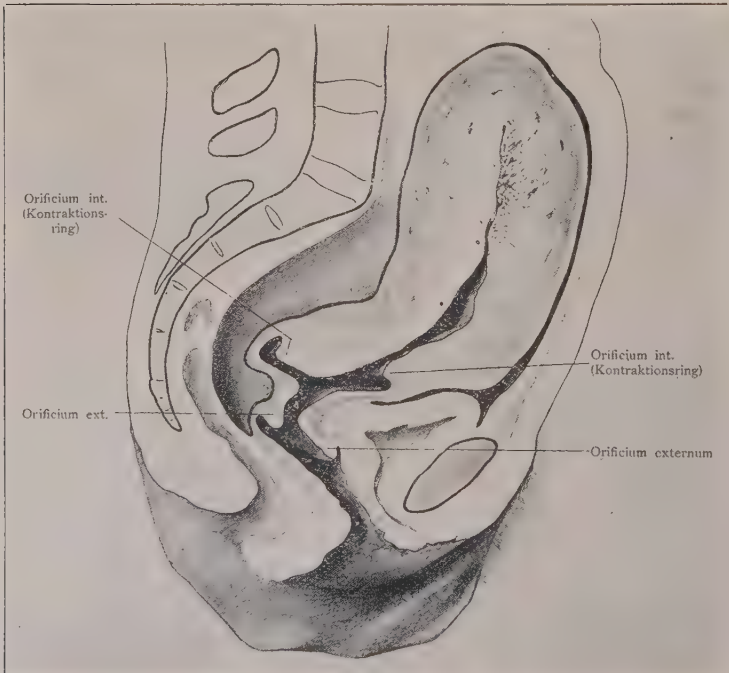


Fig. 2.—Uterus on First Day after Childbirth.
(From Bumm, Grundriss zum Studium der Geburtshülfe, 1903.)

we are accustomed to associate with ascites. The flanks are filled out while the center is depressed. The abdominal viscera which had become more and more crowded during pregnancy, find all at once abundant space within the peritoneal cavity. The intestines, in particular, are now free to expand without any restraint. You all have encountered cases of meteorism which occasionally may assume alarming proportions. This distension of the bowels continues to exercise a strain upon the already overstretched abdominal muscles. The undue accumulation of gas within the bowels may produce a paralysis of the intestines; proper peristalsis is prevented, and the natural sequels of this disturbance must needs follow. The prophylaxis of this condition simply consists in the application of an abdominal bandage. The correctness of this principle has long been recognized in England and America, and the ever increasing number of new models recommended proves that also in Germany the need for bandaging the abdomen in the puerperium has at last become widely apparent.

There remains only the problem: What kind of a bandage should be applied? The general practitioner usually helps himself with a towel or a piece of cloth pinned more or less tightly over the abdomen. Such a make-shift bandage does not remain in place unless it is held down by a tight perineal strap, which in itself is very annoying to the patient, particularly when a tear of the perineum has been sewed up. The slightest movement of the patient causes such a bandage to wrinkle in the back and thereby produces discomfort. Others put straps of adhesive plaster over the abdomen after confinement, but this often irritates the skin and causes eczema. Moreover, as the shape of the abdomen changes these adhesive plasters must frequently be re-applied. On several occasions I have found patients with a piece of cheese-cloth or gauze loosely wound around the hips. This sort of a "bandage" requires no comment.

If you bear in mind that a bandage should give support to the weakened abdominal muscles and at the same time be of such a character as to rapidly adapt itself to the ever changing shape of the abdomen, you will not fail to appreciate the advantages of a bandage such as I here demonstrate to you. This bandage was described by H. B. Semmelink of Holland in *Zentralblatt fuer Gynaekologie*, 1905, No. 52. It consists of two pieces of linen, muslin, or flannel, which have been sewed together in the median line. The inner piece extending from the costal arch to the pubic bone is tightly pinned over the abdomen. The outer piece extends from the costal arch to the middle of the thighs. It is torn into a number of tails which have been overcast in order to prevent their tearing any further when the tails are tied over the inner bandage. I have used this bandage in all my private cases for almost three years and have been uniformly pleased with the results. The bandage thus applied closely follows the outlines of the body. It can not slip nor wrinkle in the back. It gives a pleasant feeling of support. It

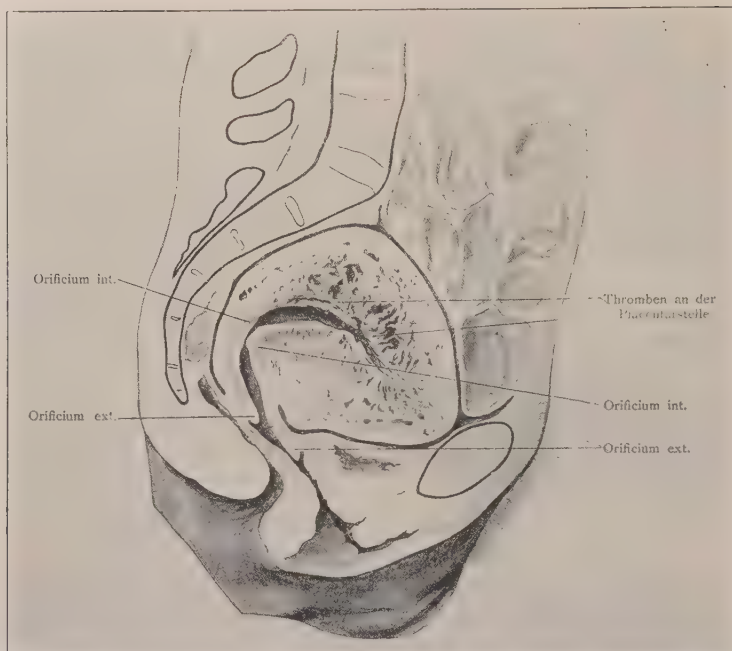


Fig. 3.—Uterus on Fifth Day after Childbirth.
(From Bumm.)

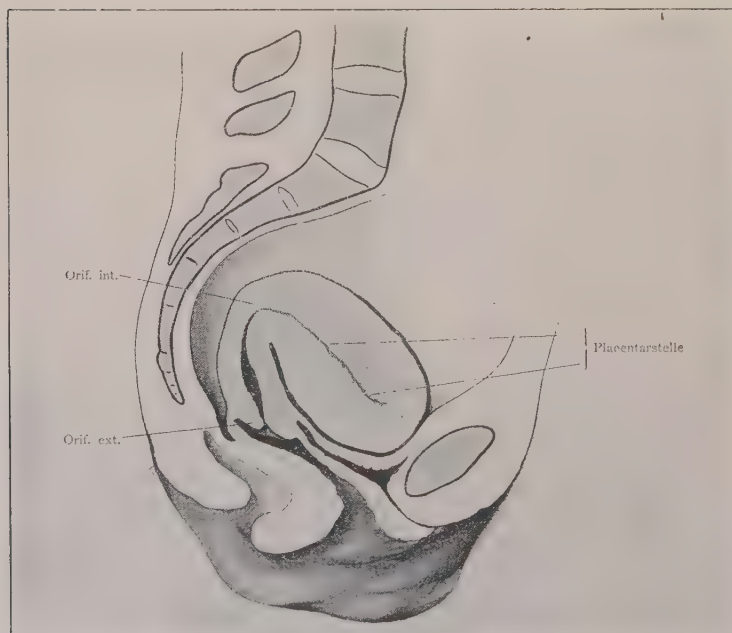


Fig. 4.—Uterus on Twelfth Day after Confinement.
(From Bumm.)

holds the legs together and thereby prevents any strain upon perineal sutures; also the vulvar pads are kept in place. Whenever the bandage becomes loose, we simply retie some of the tails. I usually apply this bandage one or two hours after confinement when the danger of atony has passed, and the uterus needs no longer be controlled. The bandage is worn day and night as long as the patient is in bed, and is taken off only during physical exercises, of which I shall speak presently. For urination and defecation the lower part of the outer bandage must be loosened and turned upward. This requires a little more time than with an ordinary binder, but after all a bandage is employed not for the convenience of a nurse, but for the benefit of the patient. The advantages of this bandage are obvious. It fits tightly and comfortably. It is a simple device and readily applied with a little practice. The material costs but a few cents, and each patient can easily prepare three or four of the bandages herself. The cloth is washable, and a fresh bandage can be put on whenever necessary. If desired, they may be sterilized with the other dressings. My results with this bandage have been more than satisfactory. Patients who had experience with other binders in former confinements, have remarked on the greater comfort of this bandage, and the nurses, as a rule, have speedily learned how to apply the bandage properly.

If by means of a bandage we accomplish better involution of the abdominal skin and muscles, we also save the appearance of the patient from disfigurement. This point is important enough. Look at the pictures by Albrecht Durer and Hans Holbein, those great masters of the middle ages, who so inimitably portrayed the people of their time. Every one of their matrons has a so-called "high stomach." Such a disfigurement was then considered inevitable and is held so by many even to this day. But it is necessary to eradicate this false belief, and the physician should be held responsible if by his neglect the patient loses her previous good figure.

Of greater importance even than the application of a good bandage is the question of physical exercise in bed. It is clear that mere rest in bed will weaken the muscles from inactivity. Hercules himself would have lost his strength had he been confined to bed for several weeks. To accomplish our object, namely, to render the young mother as strong, or stronger than she was at the time of her confinement, we must add systematic physical exercise.

The persistent recumbent position on the back which was enforced by most men up to a few years ago, has now been generally abandoned. The patient need not lie on her back longer than twelve hours at most in order to give the uterine sinuses sufficient time to close securely. As early as the second day, the patient should move freely from side to side without, however, trying to raise herself up. I believe that thereby the most frequent sequel to childbearing, viz., retroflexion of the uterus, can very often be prevented. As you all know, the uterine body regains

its tonus much earlier than cervix and vagina. These pictures represent the conditions on the first, fifth and twelfth day post partum, respectively. The heavy corpus uteri falls forward into a pronounced ante flexion because of the softness of the cervix and lack of support. If, however, the patient lies on her back without moving, the uterine body can just as well fall backward, particularly if care is not taken to empty the bladder regularly and in short intervals of from four to six hours.

More systematic physical exercises should begin on the eighth day post partum, or on the twelfth day if a perineal laceration had to be repaired. It is necessary to give detailed instructions in every case and to explain the reason for these exercises. One should begin with one kind of exercise and add another every day. The exercises should be taken morning, noon and night, and the abdominal bandage taken off during these times. The patient lying flat on her back, unsupported by pillows, is told to raise her head and shoulders slowly as high as possible without the aid of her arms. Thereby the recti muscles contract coming nearer together and abolishing the ever present diastasis. This can be readily demonstrated to the patient. Then the knees are flexed and drawn toward the body—first one, then the other, and finally both together. Next, the legs are raised straight up, first one, then the other, and finally both. This exercise strengthens the lateral muscles of the abdomen. Now the patient turns on her abdomen and raises both head and feet, thereby exercising the muscles of the back. The feet, too, require frequent bending and rotary motions to overcome any future difficulties in walking during the first few days after getting up. The muscles of the pelvic floor can be greatly strengthened and relaxation of the vaginal outlet frequently be prevented by teaching the patient to contract her vagina. Finally, the elasticity of the abdominal skin may be restored to a remarkable degree if the patient learns a rotary motion of her abdominal walls, which is familiar to all of you from the exhibitions of Egyptian dancers. I believe myself to have been the first to introduce this exercise for medical purposes.

There may be some who object to such callisthenics in bed, perhaps, because it takes too much time to devote attention to these details. As to this, the woman who pays for your services, has a good right to demand as much of your time as is necessary to insure her future well-being. These exercises are indispensable to a complete restoration. Dr. von Wild, in Cassel, was the first to recommend them for the purpose of relieving the obstinate constipation after childbirth, and his suggestion has since been widely accepted.

A woman who has had sufficient rest in bed and whose muscles have been strengthened by methodical exercise, presents a picture quite different from the appearance of a young mother as unfortunately we see it only too often. The pale, drawn look, the attacks of vertigo or even fainting, the utter exhaustion—they all have vanished. In their stead, we find a healthy looking face with normal complexion, in spite of an

indoor life of several weeks, a straight figure, an elastic step—no physical infirmity that may interfere with the enjoyment of life or mar the happiness of young motherhood. And is this not a goal worthy of our highest efforts as obstetricians?

CONCLUSIONS.

1. According to my statistics, out of 291 mothers with gynecologic ailments, 156 were sick ever since they had given birth to a child.

2. In the overwhelming majority of these cases, the origin of their ailments could be traced back to a faulty management of the puerperium.

3. In a well directed puerperium prophylaxis must be considered first and foremost.

4. The object of obstetrics is not merely to deliver a living child, but also to restore the mother to perfect health.

5. My own remarks have been limited to a few points of prophylaxis on which a consensus of opinion has not yet been achieved.

6. I maintain that a puerpera should stay in bed not less than eighteen days.

7. Every puerpera should wear an appropriate bandage.

8. The model described by Semmelink appears to me most advisable.

9. Mild methodical exercises started in the second week after confinement, and continued for several weeks after patient has left the bed, are indispensable to a complete restoration.

10. Every puerpera should be examined carefully six weeks post partum before she should be discharged from medical observation.

HYGIENE OF THE MOUTH, NARES, PHARYNX, INTESTINE,
SKIN, MUCOUS MEMBRANE IN GENERAL; OF LYMPH
BODIES AND LUNGS. PREVENTION OF COLDS.*

By NOBLE P. BARNES, M. D., of Washington, D. C.

If attending to seemingly little things, things frequently neglected and things approaching Godliness, are important, then hygiene of the mucous membranes must be regarded as a consequential requisite in the prevention and cure of disease.

In the first instance a mucous membrane, to be clean and healthy, must have free drainage. Therefore in the very beginning, the adenoid vegetations and the enlarged tonsils, that are present in a majority of tuberculous children, must be promptly and completely removed.

The frequently performed tonsillotomy may, to a degree, relieve obstruction, but the decapitated tonsil becomes the submerged, partly concealed old fort that harbors various organisms and affords an open path for the invasion of the tubercle bacillus. Nothing short of enucleation of this degenerated and diseased structure will permit of developing a healthy mucosa at that point; and only by complete adenectomy and tonsillectomy will the turbinates reduce to their normal size, free drainage of the nasal mucosa be established, and proper breathing maintained. Only by free drainage and free air space in the nasal cavity can we hope for relief and cure of ear disturbances, recovery of diseased pulmonary and gastrointestinal mucous membranes, or arrest and non-recurrence of a tuberculous process.

Having obtained these first measures, the upper air passage will usually take care of itself unless there is a deflected septum, bony spurs, polypi or chronically enlarged turbinates that require additional operative measures. If the mucosa is thickened the employment of a mild alkaline antiseptic solution, followed by mentholated alboline will assist in affecting a healthy condition.

Laryngoscopic examinations should be made when possible, as a local infection may thus be discovered that might be the prime cause of the cough and hemoptysis. In the event of actual lesion the usual local treatment plus rest to involved structures, is imperative. In simple catarrhal conditions of the air passages, nebulization with aromatic, antiseptic oils, blended to produce a pleasant and soothing effect, is of undoubted value.

The rising toilet for all individuals who possess sensitive mucous membranes, and those inhaling city dust, should include the employment

*Read in Section IV., International Congress on Tuberculosis, Washington, D. C., 1908.

of a non-irritating nasal douche and cold water gargle following the usual soap and brush to the teeth and gradually cooling shower bath. A free change of air in the lungs is next in order, the method depending upon the physical condition; and lastly, inhalations for five or ten minutes of mentholated, aromatic oils.

During this time much of the mucous collected in the larynx, trachea and bronchi will be expelled. This means better appetite, better digestion and less nausea from mucus lifting after breakfast. Besides these local measures, the one drug, where it is not contraindicated, that will assist in promoting a healthy condition of the respiratory mucosa, is iron iodide, given in small, tonic rather than alterative doses.

An active inflammatory process in any location demands rest of the affected part and in no instance is it more needed than in a lung involved in an acute tuberculous invasion. Here, lung stretching by exercise or by high altitude, will not only prevent healing and scarring, interfere with the formation of a protective membrane to institute caseation and calcification, but favors further invasion of lung tissue and induces hemoptysis.

After the inflammation has subsided and the disease is quiescent, gradual expanding of the lung should be attempted; always under the direction of a competent observer. Physical training will yield excellent results if judiciously applied. Removal to a stimulating climate may benefit lighter forms of the disease, but over-exercise or over-work may result in impairment of both lung and body.

• In practicing lung gymnastics two precautions should be observed. First: Never expand the chest beyond the degree of comfort, for fear of tearing open old wounds or rupturing air cells; the latter condition in itself being followed by infection, as witnessed in many athletes. Second: Expel the air through the nose, instead of the mouth or puckered lips as taught by most teachers of physical culture, because the turbinates are cooled by inhalation, warmed by exhalation and dust caught upon the nasal hair and mucous membrane will be blown out instead of drawn further in.

Only second in importance is the mucous membrane of the digestive tract and in some instances it takes first place. As a route for tuberculous invasion it is quite as common in infants and young children as is shown in recent experiments. Besides the organisms that may be carried to the mouth by infected food and constant application of unclean hands and toys, the bovine tubercle bacillus in its pathogenicity to children is to-day a proven fact.

Hess¹ in reviewing the cases of primary mesenteric gland tuberculosis in which the type of bacillus has been differentiated, demonstrated over 60 per cent. to have been caused by the bovine type. Among children this type greatly prevailed, whereas in adults the majority of infections were with the human variety. There is strong evidence that these organisms are as similar as different families of the human race, only

changed by environment. In this event most tuberculous infection must occur during the milk feeding age.

Certainly the only rational method of keeping the digestive tract clean is to prevent the introduction of infection. We can pasteurize and kill the organisms in milk, preferably by a process of lower temperature and aeration, or rear a breed of cattle immune to tuberculous disease as suggested by Gunn.² We can give sterile animal broths and other foods we know to be clean. But all this is "love's labor lost" unless we can prevent the numberless methods of infection that come from a lack of correcting the little things.

The abominable pacifier is in the nurse's mouth, then in the baby's, then on the floor and again in the baby's mouth. In this cycle the child can get several thousand organisms. Further, these articles to suck upon deform the mouth and palate, keep up a constant hyperemia, congest the post-nasal and tonsillar glands, and lastly, create a habit of having something in the mouth. So that by the time the child is old enough to walk, and up until school life, everything from strings to pennies finds a resting place in the mouth, usually accompanied by one or more dirty fingers. From school life on this habit continues in the form of gum chewing, all day suckers, pencil-wetting and nail-nibbling.

When we are confronted with an infected digestive mucosa, we must depend upon the hydrochloric acid of the stomach to a great measure. If it is deficient we must supply it.

This acid is nature's antiseptic for the stomach and stimulates the flow of nature's intestinal antiseptic, the bile. Internal antiseptics should be administered in these cases as well as to those who are too young to keep the secretions of the respiratory membrane from slipping into the stomach.

Another evidence of neglecting little things in the growing child is the lack of attention to the teeth. Practically all children, for a considerable period, absorb into their lymph channels and carry into their stomachs hosts of organisms from decaying teeth that should be cleansed and filled, or extracted. The popular mind must be disabused of the idea that the first teeth can not be disturbed for fear of interfering with the second set.

There is just one thing to do with the tuberculous lymph bodies when they can be reached; prompt and complete removal of the chain. Seventy-five per cent. of school children will exhibit enlarged lymphatics due to excessive metabolism, but these can be reduced by diet, hygiene and proper medication. Sodium salicylate and iron iodide are appropriate remedies.

Wilder³ states that "the earlier statistics as to frequency of tuberculosis of the eye must be regarded as rather misleading;" as Groenouw suggests, "with a growing knowledge of the subject, the number of cases of tuberculosis of the eye is naturally increasing. Brejski holds, ten per cent. of cases of parenchymatous keratitis are tuberculous. Diez⁴ estimates the percentage as high as fifty. Haas claims that as high as

fifty per cent. of all cases of iritis is tuberculous. Many observers, like Greef, Mickel and others, find by histologic examination, evidence of tubercle in the uveal tract that was not apparent during life." This suggests the need of the prophylactic eye toilet that can be carried out with the usual morning and evening toilet, and consists of non-irritating, antiseptic lotions applied with the convenient eye cup.

Ear infection is usually from within, being an extension of inflammation from the nasal cavity, due to lack of drainage and air space. Relieving this condition as suggested and with cleanliness to the external auditory canal we will avoid trouble from this source. Examination of the infant's ear should be routine. Disturbances here may cause the careless observer to overlook the beginning otitis and treat the baby for most anything, from colic and bronchitis to perverted disposition and meningitis.

To do these things that have been enumerated, to keep the mucous membranes clean and healthy, means in itself one of the first steps in preventing the so-called "taking cold." The expression "catching cold," "cold in the head, chest or back" means nothing to the trained mind. If the mucous membranes are free, open, well drained and healthy, there will be no army of organisms waiting for a lowering of resistance by exposure to atmospheric changes, fatigue or hunger, to operate in the production of rhinitis, bronchitis, tonsillitis or rheumatism.

In addition to hygienic measures mentioned, we can assist in establishing a considerable degree of resistance by proper bathing. The usual hot bath must be discontinued. The tepid gradually cooling shower accompanied by friction should be adopted; the temperature depending upon the individual case and lowered only to the point of getting good reaction.

In short, measures to be instituted for the "prevention of colds" are as follows: Proper hygiene of the skin and mucous surfaces; proper hygiene in diet, sleep and living; avoiding fatigue, long hunger, mufflers and chest protectors; avoiding dust and poorly ventilated places. Churches, theatres and even schools are often filled with hot, germ-laden air; and the truant, though regarded as a bad boy, must be credited with good sense in preferring the open air. For no exercise in the play park can overcome the injury from studying in foul-aired school-rooms or sleeping in closed apartments. Nor can fresh air and good food overcome disease caused by defect.

The hygiene of to-day should be taught in the school, not about the effect of tobacco and alcohol, but that the avenues to infectious diseases are through the skin and mucous membranes and that they must be kept clean and healthy.

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THE APPARATUS USED BY THE GREEKS AND ROMANS IN THE SETTING OF FRACTURES AND THE REDUCTION OF DISLOCATIONS.

By JOHN S. MILNE, General Practitioner in Hartlepool (a smoky town on the Northeast Coast of England).

Let me point out that the scope of the paper does not cover the whole ground of the wide knowledge possessed by the ancients on the subject of fractures and dislocations. It is merely an enumeration of the apparatus used in the treatment of these, with short extracts indicating the method of employing them. The authorities on the subject are Hippocrates, in his works on Fractures and Articulations, 460 B. C.; Galen in his commentaries on these (130-200 A. D.); Celsus (about 20 A. D.); a chapter by Heliodorus preserved in the works of Oribasius (325 A. D.), and the little encyclopedia of Paulus Ægineta (6th Century A. D.) I have also taken a few illustrations from the *Armamentarium* of Scultetus.

In the treatment of fractures the ancients employed, as we do to-day, splints, pads and bandages.

Hippocrates in his book on *Fractures* gives a very complete account of the method of applying these.

First of all, the limb was smeared with a waxy composition, called cerate, in order to prevent the bandages from slipping. The bones having been got into position by means of extension and other manipulations, a roller bandage soaked in cerate (Fig. 1) was fixed by one or two turns round the seat of the fracture, and then carried upward for several turns. (Fig. 2.)

Next, a second waxed bandage was applied, beginning as before at the fracture, passing downwards for several turns (Fig. 3), and then upwards to end at the same spot as the first bandage.

Next, elongated pads, formed of folded linen and stiffened with cerate, (Fig. 4) were laid along the limb in such a way as to cover it completely, and fixed by the application of roller bandages which had as before been dipped in cerate.

No splints were applied at this time, so that so far, the treatment corresponds in principle to the immovable bandages of gum and chalk or plaster of Paris which we employ to-day. On the third day, the swelling of the part having subsided and the bandaging having become somewhat loose, the whole was removed and the limb bathed with hot water, and the bandages and pads were applied as before.

Three days afterwards, *i. e.*, on the seventh day from the accident, the swelling was expected to be quite gone, and the bandages again

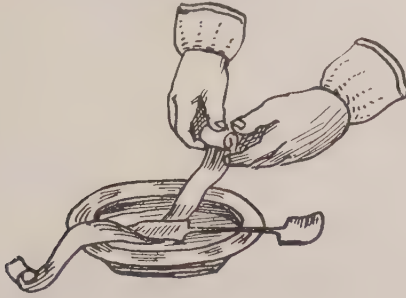


FIG. 1. Waxing a bandage. After Scultetus. Double spatulæ of the form shown are found among ancient Roman instruments from Pompeii.

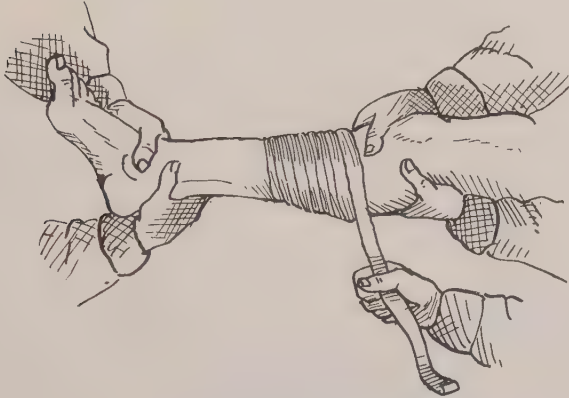


FIG. 2. Waxed bandage fixed over site of fracture and carried upwards for several turns. After Scultetus.

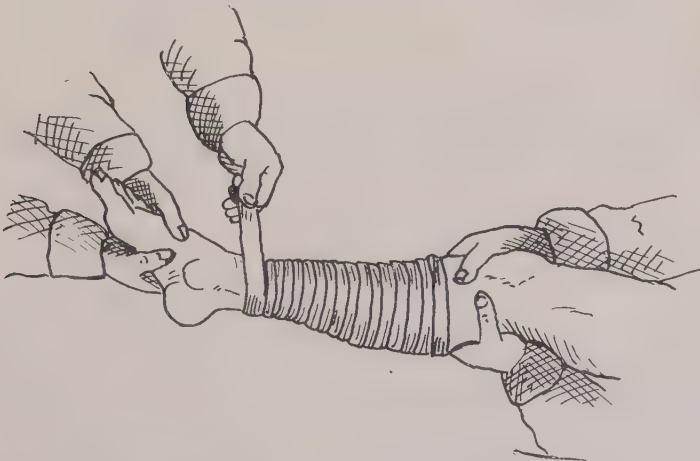


FIG. 3. Second waxed bandage fixed over the site of fracture and carried downwards for several turns, preparing to return upwards and end at the top of the first bandage. After Scultetus.

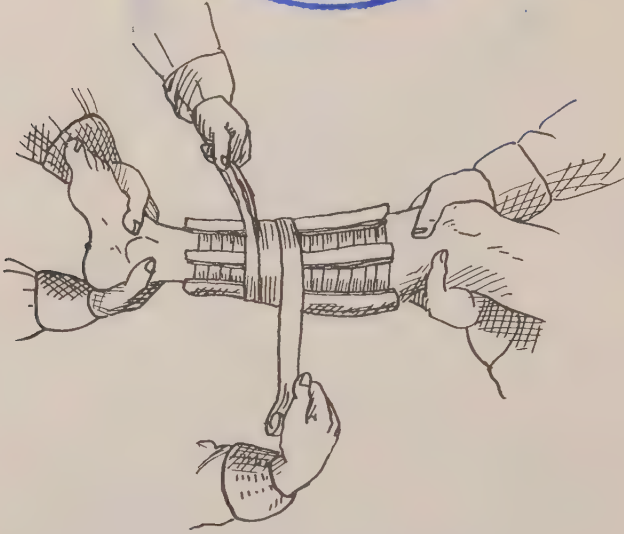


FIG. 4. Applying the waxed compresses over the bandages. After Scultetus, but Hippocrates says the compresses ought to completely surround the limb and not be separated from each other by a space as this figure shows. It makes the pads look like splints.

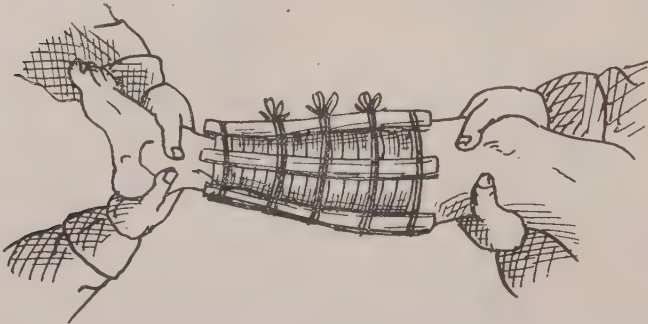


FIG. 5. Applying the splints on the seventh day. After Scultetus. First the two bandages have been put on, then the waxed pads, the bandaging to fix which can be seen under the splints.

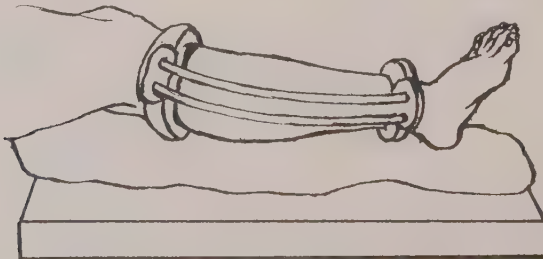


FIG. 6. Splint for leg-fracture described by Hippocrates. Made of elastic rods fitting into loops on shackle-like pads above the ankle and below the knee. After Littré.

loosened, and now these having been removed and the limb having been bathed, the pads and bandages were put on as before, but this time splints were applied in addition. (Fig. 5.) These were narrow and rod-like, and were arranged all round the limb, the breadth of a finger intervening between each, and were kept in place by three or four strings tied just tight enough to keep the splints in position without their action contributing at all to the compression of the part. The splints were examined every third day till bony union had taken place, and the whole dressing was reapplied whenever it became loose.

In addition to the fixation by the above methods the part was further put at rest by a sling, in the case of the upper limb, and in that of the lower, by elevating it in bed on a pillow or a box splint.

Compound fractures were not treated with splints until the wound had healed, but were lightly put up in pads and bandages and laid in a box splint and dressed frequently. If there was much discharge, a goat's skin was placed beneath, to catch the discharge and embrocations.

We shall now consider a little more fully each of the materials mentioned above.

Roller Bandages. Hippocrates says that the bandages should be clean, light, soft, thin, and without seams, yet strong enough to bear stretching. Their breadth should be proportionate to the part under treatment. They should be three, four, or five finger breadths broad, and as many cubits in length.

Rolling should be practiced with both hands together, and with either separately, and it should be done quickly, elegantly and without causing discomfort to the patient.

Sometimes the turns were to be made to the right, and sometimes to the left, and sometimes a double headed bandage was to be used and applied crosswise. After the bandage was on, it was to be finished off by stitching with a needle and thread, lest a knot should cause discomfort.

All the methods of applying the roller bandage which we now employ, together with many other complicated methods, are described by the ancients, and will be found described and figured in the works of Oribasius in the edition of Stephanus (*Medicæ Artis Principes*) and also in Scultetus.

Pads (or "Compresses"). These were made of linen folded three or four times. They were three or four fingers in breadth, and their length was proportionate to the part.

They were applied longitudinally in such number as to encircle the limb.

In applying splints extra pads were put on parts where the bone projected, as at the ankle.

Splints. Hippocrates says these should be smooth, even, rounded at the ends, and concave. They should be secured with strings. Those at parts where bone was prominent should be short so as not to press on the part.

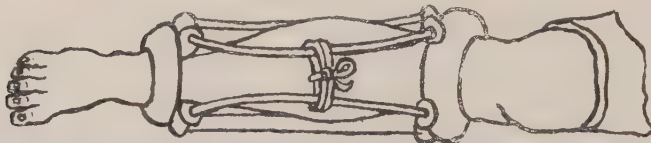


FIG. 7. Top view of the same to show the tying together of the two top rods.



FIG. 8. "Box splint or "canal" after Scultetus.

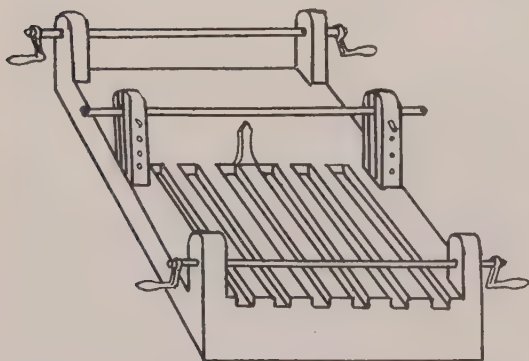


FIG. 10. Scamnum of Hippocrates after Littré.



FIG. 9. The Glossocomium of Galen, applied for fracture of the thigh. After Vidius.

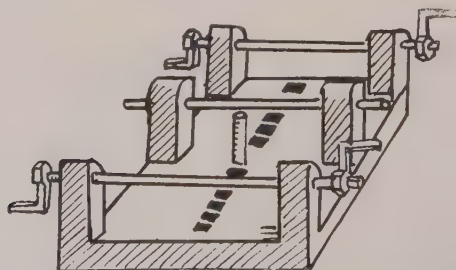


FIG. 11. Scamnum of Hippocrates after Vidius. It differs from the description of Hippocrates in having slots instead of grooves, but it is the oldest figure of the instrument.

Palladius says that they should be made of the wood of the lime tree, or, where this could not be procured, reeds were to be used. They were to be round, and secured with three loose fillets or ribands, one at their upper, and one at their lower end, and one at the middle.

Paulus Ægineta says that they should be arranged not more than one finger's breadth from each other.

Special Splints. A special form of splints for fractures where the deformity could not be kept reduced by ordinary methods is described by Hippocrates.

"One should sew two round pads of Egyptian leather, such as are worn by persons confined for long in shackles, and the pads should be deeper on their aspect facing the wound, and shallower on that facing the joint, and they should be well stuffed and soft and easy fitting, the one to the part above the ankle, and the other to the part below the knee.

"Each pad should have two loops on its inner aspect and two on its outer. (Fig. 6.)

"Then taking four equal rods of the wood of the cornel tree, each of the thickness of a finger, and of such a length that they can be fitted into the loops by bending, adjust them, two on the inside of the leg and two on the outside.

"They should be of such a length that suitable extension may be kept up.

"The two which are uppermost (as the patient lies on his back) may be tied together. (Fig. 7.)

"If the apparatus does not fit properly it will do more harm than good, as indeed any other contrivance will."

Galen, commenting on this passage, says that the pads which Hippocrates describes as round are really like snakes or like the sausages which butchers make, by filling intestines with chopped meat or other such food.

Minor Splints. In fracture of the lower jaw Hippocrates bound the teeth together with gold wire, and applied a light splint of moulded leather on the outside of the jaw.

In fracture of the nose, Paulus Ægineta says that tents of cloth were applied to each nostril. Some sewed into these the quills of goose feathers, so that the patient could breathe through these.

Box Splints. Hippocrates says that he is rather at a loss whether to recommend box splints or not. They are of some use, but not of so much as many suppose, and a board, unless padded, is rather an uncomfortable thing for a limb to lie on. (Fig. 8.) However, the common people have more confidence in the treatment where they are used; and they are useful in such times as the bed requires rearranging or the patient has the bowels moved.

If used at all they should be of sufficient length. Those for fracture of the thigh should reach from the hip to the heel, for, if flexion of the knee be allowed, distortion of the part is caused.



FIG. 12. The scamnum in use for Dislocation at the astragalus.

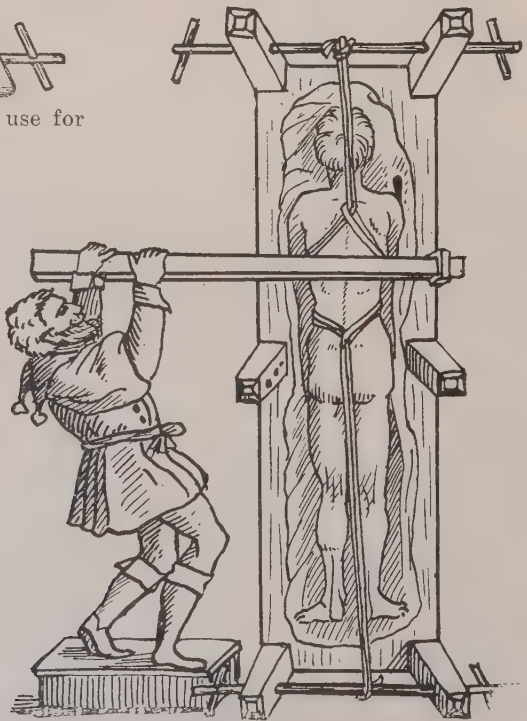


FIG. 13. Reduction of a gibbosity of the spine by the scamnum.

Nothing, however, is more convenient than a cushion or something similar, either of wool or linen and not hard. It is to be made hollowed along its middle, and laid below the limb. In any case a shawl should encircle both splint and limb, as children are swathed in bed.

Paulus Ægineta describes the box splints as of wood or earthenware. Some applied them only in cases of compound fracture. A better means of steadying the limb, he thinks, is to make a long pillow of a garment, and to fold it up at the sides, round the limb, and to steady the whole with pillows. The garment should be lined with a skin, to catch the embrocations.

Galen says that they should be rounded externally and hollowed inside. They were made of different kinds of wood.

Celsus says that they should have in their lower part a hole for the escape of discharge, and they should have a foot plate.

Glossocomium of Galen. This ingenious and useful splint, says Galen, had been invented by the practitioners of his time.

It took its name, he says, from the Attic name for a box used for storing papers of value or which one wished to conceal or to carry on a journey, and was variously spelled glossocomum or glossocomium or with two t's instead of two s's. (Fig. 9.)

It might be applied to the femur or the tibia, and was to be used continually till callus had formed.

Galen gives a full description of it, but its principle is best understood from a drawing such as that given by Vidius or Scultetus.

On rotating the handle the upper and lower fragments are simultaneously pulled apart.

Dislocations. The different varieties of dislocations of the joints were known to Hippocrates nearly as completely as we know them to-day, and the various manipulations necessary for their reduction are fully described.

Cases which resisted reduction by means of ordinary measures, such as extension over the back of a chair or the lower half of a door in the case of the shoulder, were treated by more powerful apparatus; improvised or kept for the purpose.

Bands for extension and counter-extension were applied. These consisted preferably of supple leather, but in the absence of these Hippocrates says that iron chains, cords, or the ropes for ships may be used, being wrapped round with woollen cloth at the parts where they are to come in contact with the skin.

In reducing dislocations of the fingers, Hippocrates says that nooses formed from the twisted bast of palm shoots are suitable. Aristotle refers to these in his book on the *Parts of Animals*.

The power to be applied was obtained by means of winches or drums on axles, levers, wedges, screws and pulleys.

Hippocrates only mentions three of these: "Of all the mechanical instruments used by men the most powerful are these three, the winch,

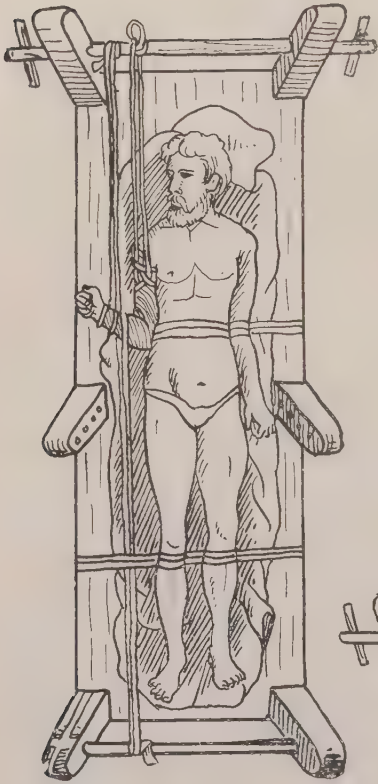


FIG. 14. The scamnum in dislocation of the elbow, after Vidius.

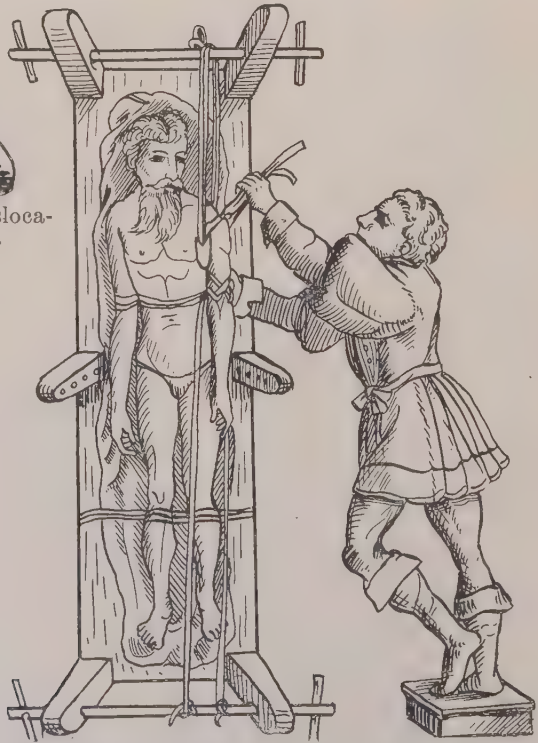


FIG. 15. Reduction of dislocation of the Humerus by the scamnum. After Vidius.

the lever and the wedge." He does not mention the screw, though it is most likely that the Greeks of his time knew of it, but we shall see that later the Greeks applied it, as in the machine of Nymphodorus, to generate power for reducing dislocations.

Hippocrates does not in this passage refer to the use of the pulley, though in another place he mentions it in connection with the treatment of fracture of the spine, and we shall see several instances of its use for converting the direction of motion in machines for the reduction of dislocations.

In one of these, the machine of Fabrus, a system of pulleys is arranged to give a considerable increase of power, so that it is not unlikely that block and tackle arranged to multiply power would be used as well, although we have no direct description of such.

We may note that Scultetus (Tab. xxi) illustrates a block and tackle which he says that he has taken from Vitruvius, Lib. 10, ch x, and which he says was in use in his day for the reduction of dislocations.

As many of the surgeons were "*periodeutae*," traveling about from place to place, it was not possible for them to carry about the heavy contrivances that the practitioner settled in a large town could have at his command, but Hippocrates shows how to improvise imitations of these, and small winches which could be attached to such household implements as ladders were carried as part of the portable outfit.

The Scamnum, or Bench, of Hippocrates. This contrivance, of which the first account (Fig. 10) is given by the father of medicine, was used by all succeeding ancient surgeons, and Scultetus shows many figures of it in actual use in his time. Galen had a very high opinion of it. He says that all varieties of dislocation could be reduced by it.

Hippocrates says that "the best thing for any physician who practices in a populous city is to have prepared a proper wooden machine with all the mechanical powers applicable in cases of fractures and dislocations, both for making extension and for levering.

"For this purpose, it will be sufficient to possess a board resembling in length, breadth, and thickness, the quadrangular threshing boards made of oak.

"It should be six cubits, or a little more, in length, and about two cubits in breadth. A foot will be sufficient thickness for it.

"Along it from one end to the other an excavation (in the ground) must be made so that the working of the levers may not be higher than necessary.

"Then at both sides we are to raise short, strong, and firmly fixed posts carrying axles; and in the middle of the bench five or six long grooves are to be scooped out, about four inches distant from each other, three inches will be sufficient breadth and also depth for them, and although the number of grooves I have mentioned will be sufficient there is nothing to prevent their being made all over the bench.

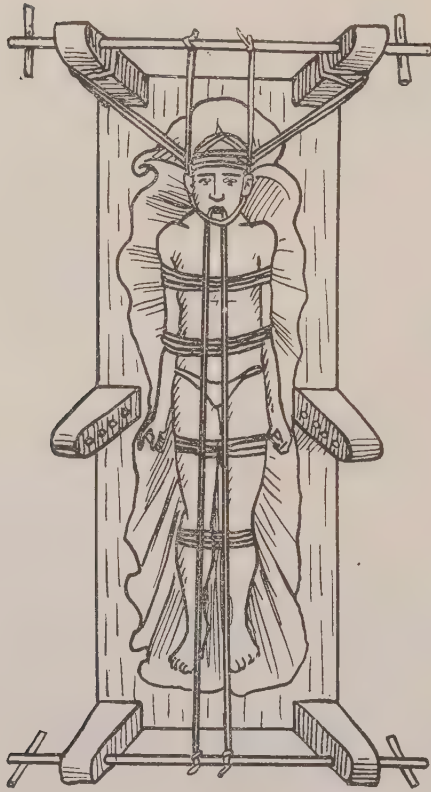


FIG. 16. The Scamnum in dislocation of the jaw. After Vidius.



FIG. 17. Counterextension by an axillary loop on the injured side and a perineal band on the other. Extension by a clove hitch above the knee. The surgeon's hands are seen levering the head of the bone inwards while the assistant props the left side of the body.

"And the bench should have in its centre a fairly deep hole of a square shape, and of about three inches in size, and into this hole, when judged necessary, is to be adjusted a corresponding piece of wood, rounded in its upper part, which at the proper time is to be adjusted between the perineum and the head of the thigh bone. This upright prevents the body from yielding to the force dragging downwards by the feet. For sometimes this piece of wood serves the same purpose as counterextension (i. e., by thongs) in an upward direction, and sometimes, too, when both extension and counterextension are made, this piece of wood, if susceptible of some motion to this side or that, will serve the purpose of a lever for pushing the head of the thigh bone outwards."

. It is on this account that several grooves are scooped out in the bench.

The lever may be round or flat to suit different cases. Another mode of using the scamnum was to raise two posts at the middle of the sides, and to insert into them a transverse bar like the step of a ladder, to act as a horizontal perineal bar.

Figure 10 shows the machine constructed from this description by Littré.

A figure of the machine, by Vidius, is somewhat different, (Fig. 11) square holes taking the place of the longitudinal grooves described by Hippocrates.

I shall now proceed to give a few descriptions of actual applications of the machine to reduction of different dislocations, which, it is hoped, will be readily understood by the aid of the accompanying figures, which are mainly taken from drawings by Vidius in illustration of a chapter by Heliodorus. One cannot help thinking that this machine must originally have given the idea for the instrument of torture known as the rack. This was well known in the time of Cicero.

Celsus says that the scamnum was quite powerful enough to produce rupture of the muscles.

Fig. 12 shows the machine in use for dislocation forwards of the astragalus. Extension and counterextension are being made by thongs fastened below the knee and above the ankle.

Fig. 13 shows an attempt at reduction of the spine. Extension is being made below the seat of the lesion by a thong passed round the abdomen above the crest of the pelvis, while counterextension is maintained by a thong passed under the armpits.

The operator's assistant is levering down the gibbosity with a flat board used as a lever.

Fig. 14 shows the reduction of a dislocated elbow. The forearm is pulled down by a thong passed over its middle, while counterextension is maintained by thongs attached to the humerus and the forearm near the wrist.

Fig. 15 shows reduction of the humerus. While the extension and counterextension are made, the assistant pulls outwards the head of the humerus by a thong passed under the arm in the axilla.

Fig. 16 shows reduction of a dislocated jaw. Heliodorus is the only author who describes the use of a machine for this purpose, and it seems rather a superfluous display of force but it may occasionally have been necessary, as from what Hippocrates says it would seem that owing to the dearth of practitioners in some parts it was not uncommon to meet with cases which had remained unreduced for some time.

Of dislocation outwards at the hip (Fig. 17) Paulus Ægineta says: "If the dislocation is outwards, the extension is to be made as above, but the thong at the perineum is to be passed by the opposite parts, the groin at the one side, the clavicle at the other. The surgeon is to propel the limb from without inwards, the lever being fixed in one of the furrows formerly prepared, and an assistant fixing the sound nates, that the body may not yield."

[TO BE CONTINUED.]

MEDICAL AND SURGICAL PROGRESS

FRACTURES.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. FRACTURE AND REFRACTURE OF THE PATELLA, WITH SOME POINTS IN THE TREATMENT.—Corner (*The Practitioner*, October, 1908).
2. FRACTURE OF THE METACARPAL BONES.—MacKenzie (*The Practitioner*, October, 1908).
3. FRACTURE THROUGH THE ANATOMICAL NECK OF THE HUMERUS, WITH DISLOCATION OF THE HEAD.—Buchanan (*Annals of Surgery*, May, 1908).
4. THE USE OF IMMEDIATE MASSAGE IN THE TREATMENT OF FRACTURES.—Guarnieri (*Arch. di Ortopedia*, 1907).
5. THE OPERATIVE TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR IN ADULTS.—Flint (*Annals of Surgery*, November, 1908).
6. THE CONSERVATIVE TREATMENT OF FRACTURES OF THE FEMUR.—Ashhurst and Newell (*Annals of Surgery*, November, 1908).
7. FRACTURE OF THE OS MAGNUM.—Harrigan (*Annals of Surgery*, December, 1908).
8. A NOTE ON THE NECESSITY FOR END-TO-END APPPOSITION IN FRACTURES OF LONG BONES.—Gray (*The Practitioner*, October, 1908).

Corner says that the patella is broken in two ways: by direct violence, as by a blow on the knee which breaks the patella against the anvil presented by the femur; and by indirect violence, when the knee is flexed, and the patella, being in the quadriceps femoris, the extensor arc over the joint is broken transversely across the condyles of the femur. From an etiological point of view, fractures by direct violence are without much interest. They are usually comminuted, sometimes T-shaped, rarely transverse or oblique. He reports 504 cases. Of these 10 per cent. showed comminution. Fractures due to indirect violence are interesting from several points of view. Considering them in regard to the situation of the fracture, it will be noted that when the fracture is transverse and is in the lower part of the bone, the upper fragment is the larger, when it is in the upper part of the bone, the lower fragment is the larger. When the fracture is about at the centre of the bone the fragments are approximately equal. He found in his series of cases that 40.2 per cent. were in the lower part of the bone, 43.3 per cent. were at its centre and 16.5 per cent. were in the upper part. He concludes that when the human patella is broken by indirect violence, the situation of the fracture will always, or practically always, be where the bone is in contact with the femur, and he found that 40.2 per cent. of the cases oc-

curred with slight flexion of the knee, 43.3 per cent. with semi-flexion of the knee and 16.5 per cent. with full flexion of the knee. Oblique fracture was found in but 4 per cent. of the cases. 73 per cent. were males and 27 per cent. females. More than two fragments resulted from the fracture in 10 per cent. of the cases. Four fragments were found three times, never more. The fracture was compound in less than 1 per cent. of the cases. In 55 per cent. it was on the right side, in 44 per cent. it was on the left and in 1 per cent. it was bilateral. In the 504 cases which he reports refractures occurred in 11 per cent. Of these 84 per cent. were males and 16 per cent. females, which shows a decided increase for refracture in the percentage of males and a decrease in that of females. Refracture occurred after suture of the bone in 52 cases, after other methods of treatment in 21 cases. 69 per cent. occurred within the first year and only 12 per cent. after three years had elapsed.

The author goes into a careful consideration of the methods of operation and comes to the following conclusions: That internal splints lead to absorption of the hard substances of the bone round them. This leads to the loosening of the internal splint, and therefore more easily to its breaking with a sudden effort; and to some separation of the fragments. With the early practice of massage and movements, the fragments are still further separated, and the union between them is fibrous, not bony. A perfectly good functional limb is obtained with such a fibrous union. Bony union is quite unnecessary to an excellent result. Limitation of movement, after the fracture, is caused by the adhesion, or cicatricial contraction of the attachments, of the patella to the femur, putting the quadriceps femoris at a mechanical disadvantage. The advantage of direct and internal splintage, suture of the fragments, lies in its allowing movements of the joint to be begun early, preventing any limitation to the movements of the patella on the femur. From the point of view of the subsequent value of the limb, it makes little or no difference whether the union between the fragments is fibrous or bony, provided that the patella moves freely on the femur. It is a matter of indifference as to the nature of the internal splint used; such as silver wire, copper wire, iron wire, or silk. An absorbable suture is not a good internal splint, because its presence will be required for some weeks at least. A wire is always loosened, even if bony union takes place between the fragments. It is not clear that it is better to use two wires than one. Treatment after operation must be directed to getting a movable knee joint, and a patella freely movable on the femur. For success, the operation area must not suppurate. If operation is to be undertaken, it should be done as soon after the accident as is convenient; and before any reparative inflammation has stiffened the torn structures and increased the difficulty in bringing the fragments together and in moving the joint afterwards. Union by first intention can then be obtained between the fragments.

Previous to the surgical use of the x-ray little was known and very little recorded of fractures of the metacarpal bones. It has since been discovered, however, that these fractures are much more common than was previously believed, and leads us to consider that many of the cases that were diagnosed as contusions and dislocations were in reality fractures. The cause of this fracture is usually direct violence, of late indirect violence has been recognized as an important factor, such as has been received when a blow is delivered with a clinched fist, the force being brought to bear in the longitudinal axis of the bone. The diagnosis is difficult without the use of the x-ray as crepitus can rarely be

made out, also unnatural mobility. Displacement, however, can at times be easily recognized; there is usually ecchymosis and swelling. The author gives the following recommendation for obtaining crepitus: "Grasp the finger corresponding to the fractured metacarpal with the whole right hand, steadying the injured metacarpal with the left hand, and make steady and continuous traction." This is an excellent method for reducing displacement. If seen early and properly treated, the prognosis as to the usefulness of the hand and deformity is very favorable, if left alone or badly treated, the prognosis is very bad, the tendons becoming adherent and glued down to a mass of callus and the resultant hand has become nothing better than a claw.

Gray says that statistical inquiry into a large series of cases would succeed in refuting the statement that an end-to-end apposition is not necessary to the perfect function of a limb after fracture, and that the patient should be informed of this; further, that disability is often due to injury to the soft parts and cannot be even remotely affected by the closest and most perfect apposition. For the following reasons he believes that it is absolutely necessary to have an end-to-end apposition if a perfect limb is required: "As regards repair at the site of the injury: It is fair, I think, to compare the healing of wounds of soft parts with the repair of fractured bones, for physiological and pathological processes in hard and soft parts do not differ in any essential details. The healing of wounds by granulation is comparable with repair of separated fragments by callus; while primary union is desirable in both for similar reasons. In soft parts: (a) Primary union is quicker and the resulting scar firmer; 'weak scars' result from healing by granulation. (b) Diseases of cicatrices arise almost exclusively in scars, the result of union by second intention. (c) 'Painful scar' is practically non-existent after primary union."

Buchanan believes that fractures through the anatomical neck of the humerus associated with dislocations of the head, occupy a position by themselves as regards their mechanism of production and pathology, the nature of their operative treatment and the nature of their external treatment. Often the ordinary signs of dislocation are not present. He speaks of a case where the elbow could be applied to the chest wall and the hand placed on the opposite shoulder, the tuberosities could be felt to rotate with the shaft of the humerus under the acromion. In this case x-ray examination showed a fracture of the anatomical neck with subglenoid dislocation of the head. Here the head was removed with difficulty for the relief of persistent pain and helplessness of the limb. He reports three cases where reduction was done by open incision, giving one good result, one fair result and one result not sufficiently well established by the passage of time. He believes excision of the dislocated head to be the operation of choice. This he has done in 14 cases with two good results, six fair results, one poor result and two deaths to its credit. For fractures in the neighborhood of the epiphysis, such as Colle's fracture, intramalleolar and supramalleolar fractures, fractures at the elbow and shoulder, Guarniere recommends massage and active and passive movements. He believes that early treatment along these lines, done by the surgeon himself, not by a nurse, will give much quicker and better results. Also this is true of diaphysis fractures, where there is not much tendency to displacement. He advises that patients with upper extremity fractures be allowed up and about soon after the injury, and lower extremity fractures on the 30th day. Provisional splints only should be used, and they should be removed at each massage and

manipulation. One or two hours a day should be given to the treatment, which should be supplemented with hot baths and prudent use of electricity. Skill and discernment are necessary, but in his view it is the best and most efficient method for securing quick return of function and good union. It should be started immediately and gradually increased during recovery.

In the articles of Flint and Ashhurst and Newell, we have a rather thorough review of all the points which tend toward operative treatment of the fracture of the femoral neck as well as those which tend against it. Flint believes that the best result obtainable from conservative treatment is to secure ankylosis and that this will be associated with shortening and lameness which require compensations in the way of tilting of the pelvic and lumbar spine. Conservative treatment as well as operative treatment by pegging has the undesirable result at times of allowing the femur to be displaced upwards. Flint believes that the best results are obtained by excision of the head. Ashhurst and Newell give a report of 121 cases treated by conservative methods, such as the Buck's longitudinal extension methods, with or without sand bags, Smith's anterior splint, double incline plane and Volkmann's sliding splint. They believe that, with the exception of four patients, the results of conservative treatment were satisfactory. They are not in favor of operative treatment where it is possible to have 90 per cent. of success by conservative methods.

Harrigan points out the fact that fractures of the os magnum are more common than is generally supposed, and that they have hitherto been frequently neglected and called sprains of the wrist. This he verifies by *x*-ray diagnosis. These fractures may be caused by direct or indirect violence; their most characteristic symptom is a localized point of tenderness at the neck of the bone. In all severe sprains of the wrist the patient should be subjected to *x*-ray examination.

GASTRIC SECRETION IN INFANCY.

A REVIEW OF RECENT LITERATURE.

By ALFRED FRIEDLANDER, M. D.

1. CONCERNING THE PRESENCE OF PEPSIN IN THE STOMACH OF THE NURSING, ETC.—Reeve-Ramsey (*Jahrbuch f. Kinderheilk.*, August, 1908).
2. EXAMINATIONS AND STUDIES OF THE FUNCTION OF THE STOMACH IN THE NURSING.—Allaria (*Riv. di Clin. Pediatr.*, July, 1908).
3. CONCERNING THE RELATION OF LAB TO PEPSIN IN THE STOMACH OF THE CHILD.—Wohlgemuth und Roder (*Biochem. Zeitschr.*, Bd. 2 Heft 4-6).
4. GASTRIC FUNCTION IN CERTAIN NUTRITIONAL DISTURBANCES OF THE NURSING.—Miller and Wilcox (*Lancet*, 1907, 2, p. 1670).
5. EXAMINATIONS OF THE PEPSIN SECRETION IN NORMAL AND SICK NURSINGS.—Rosenstern (*Berl. Klin.*, March, 1908, No. II).

As the result of a series of careful experimental studies on the gastric juice of healthy and abnormal infants, Reeve-Ramsey reaches the following conclusions: (A) Pepsin is always found in the stomach of normal breast-fed children. (B) In acute gastrointestinal disturbances in nurslings, pepsin is usually present in the stomach. (C) In infants suffering from pylorospasm, pepsin and hydrochloric acid may be present in greater amounts than in normal children of corresponding age. (D) The stomach of children suffering from chronic atrophy frequently contains no pepsin, though it is noteworthy that if these atrophic children begin to improve and gain in weight, pepsin can again be demonstrated in the stomach. (E) The gastric juice of normal healthy children is able to transform proteid into peptone, and this is possible without the addition of any acids other than those invariably found in the stomach. (F) The pepsin in the gastric juice is able to do active digestion if lactic acid is present without hydrochloric acid. (G) In some cases hydrochloric and lactic acids are found even though no pepsin be present, and *per contra*, pepsin can be present in the gastric juice without the presence of either hydrochloric or lactic acid.

Miller and Wilcox examined a series of cases of nutritional disturbance in infancy with special reference to gastric secretion and function. In cases of simple atrophy they found diminished secretion of hydrochloric acid and lab ferment, without disturbance of motility or secretion of excessive quantities of mucus.

In certain cases of what these authors call acid dyspepsia (which, from the symptomatology, would appear to belong in the category ordinarily referred to as pylorospasm) the gastric secretion showed increased acidity and diminished motor power (stomach emptied itself very slowly). On the other hand these cases showed no increase in mucus secretion and no increase in the activity of the lab ferment. [The find as to the lack of mucus secretion in these cases is at variance with the generally accepted views on this subject. Many of the symptoms of pylorospasm

have been shown to be due to the existing gastritis with the production of excessive quantities of mucus.—Ed.]

In cases of true hypertrophic stenosis, the authors found most often, a distinct increase in the fermentative powers of the gastric juice (lab ferment) with, in addition, great increase in mucus secretion and stasis of the stomach contents. The total acidity is usually below normal and is partially influenced by the coexisting gastritis. These conditions change as the result of therapeutic lavage. In a critique of the work of these authors, Ibrahim calls attention to the fact, abundantly supported by the testimony of other observers, that in cases of true hypertrophic pyloric stenosis hyperacidity is very often found.

Allaria, as the results of his experimental and clinical studies, finds that the stomach of the nursling shows various anatomic and functional peculiarities which render its functioning powers deficient as compared with the powers of the adult stomach. He calls especial attention to the very low acidity even in normal infants, the insufficient digestive power of the pepsin in the infantile stomach, the weak antiseptic powers of the gastric juice in infancy, the lack of an osmo regulating force of the stomach, in consequence of which there is a lack of gastric isotone.

Discussing the relation of the lab ferment to the pepsin in the stomach of the nursling, Wohlgemuth and Röder say that while the reaction of the lab ferment to chemical reagents and various gradations of temperature, as well as its presence during the first days of life have all been established, we are still in darkness as to the relations of lab to pepsin. As the results of the studies of the authors on stomachs of children of various ages, it would appear that there could be no possibility of preponderance of activity of the lab ferment as compared with peptic activity. Wherever there is strong peptic activity, there we find the lab ferment very active also, and *vice versa*. These two functions would therefore appear to be correlate in the nursling.

With reference to the secretion of pepsin in infancy, Rosenstern's recent studies are of especial interest. As a test meal, the author employed tea sweetened with saccharin, finding this preferable to milk. Quantitative determinations were made by the method of Jacobi, which method is dependent upon the fact that an emulsion of ricin and hydrochloric acid is made clear by the addition of pepsin. The author summarizes his results as follows: The pepsin secretion of the healthy artificially fed infant increases with age up to three months, when it reaches a point at which it remains constant. Breast-fed infants secrete less pepsin than artificially fed babies at corresponding ages. The quantity of pepsin secreted by the stomach does *not* vary according to the state of nutrition, but is more or less constant for the age of the infant. Thus older children who are under weight, secrete pepsin in correspondence with their age and not their weight. Digestive disturbances acute or chronic do not diminish the quantity of pepsin. But when the food taken in decomposes in the stomach, the quantity of pepsin is smaller than normal. In infantile atrophy (the stage of decomposition in Finklestein's classification of alimentary intoxication) there is thus a marked diminution in the quantity of pepsin secreted. The author, as the result of his studies, does not believe that the diminution of ferment in the stomachs of infants leads to definite symptoms or plays an etiological role in the digestion of infants.

CARDIOSPASM.

A REVIEW OF RECENT LITERATURE.

By JESSE S. MYER, M. D.

1. CONTRIBUTION TO THE STUDY OF THE MUSCULAR CARDIAC CLOSURE.—Sinnhüber (*Zeitschrift f. klin. Med.*, 1903, Vol. 50, Part 1 and 2).
2. PATHOLOGY AND THERAPY OF CARDIOSPASM.—von Mikulicz (*Deutsche med. Wochenschrift*, 1908, Vol. 30, No. 1 and 2).
3. DILATATION OF THE OESOPHAGUS WITHOUT ANATOMICAL STENOSIS; SO-CALLED IDIOPATHIC.—Rosenheim (*Berliner klin. Wochenschrift*, 1902, No. 11-12-13).
4. CARDIOSPASM.—Plummer (*Jour. A. M. A.*, 1908, Vol. 2, No. 7).

Until comparatively a few years ago cardiospasm with dilatation of the oesophagus was comparatively unknown. As in many other instances, however, as soon as the attention of physicians was directed to the existence of such a condition the literature on the subject rapidly multiplied. Just as, for instance, congenital stenosis of the pylorus was not recognized until a short time ago, and now the number of cases reported in the literature may be counted by hundreds.

In 1900 Neumann was able to collect seventy cases. In 1904 Mikulicz estimated that about 100 cases had been reported in the literature. Gottstein, together with his own cases, succeeded in collecting 140. Plummer recently added to this number 40 cases which came under his own observation, and so the literature grows. Perhaps no factor in diseases of the oesophagus has so stimulated the study of both the physiology and pathology of the oesophagus as has cardiospasm. Among those who have advanced our knowledge of both the physiology and pathology may be mentioned such names as Meltzer, v. Mikulicz, Sinnhüber, Rumpel, Rosenheim, Strauss, Kraus and others.

Sinnhüber investigated especially the question as to the normal state of the cardia, namely, as to whether it is normally open, whether its walls lie loosely upon one another, or whether it is closed by muscle contraction. At this time, 1903, he states that little more was known on this point than was known 100 years ago. Up to the beginning of the last century the general impression was that it was closed. Magendie and Johannis Mueller in 1825 and 1837 made the observation that the lower third of the oesophagus underwent alternate contractions and relaxations, due to peristaltic waves and that there were moments when the cardia was entirely relaxed, though these periods were very short. Schiff studied the cardia through windows made in the stomach of animals and was unable to demonstrate this independent action on the part of the lower third of the oesophagus, but did find that these movements held good for the cardia. As early as 1881 and 1884, he and Meltzer had found that cutting the vagus in the neck or below the diaphragm did not lead to paralysis, but to irregular contractions of the cardia, afterwards followed by spasmodic contractions lasting for a considerable length of time, occasionally followed by relaxation. Kraus later demon-

strated, clinically, in a man with a spindle-shaped dilatation of the oesophagus that both vagi were diseased. Sinnhüber also conducted a series of observations on a sword swallower, oesophagoscopic examinations of dogs, observations of the cardia through the stomach after double-sided vagotomy both above the diaphragm and in the cervical region and the examination of ruminants. He came to the conclusion that the cardia is in a state of tonic contraction, reinforced by the circular muscles of the diaphragm surrounding and the oblique insertion of the oesophagus into the stomach. He thinks that the closure of the cardia is the result of two opposing forces, a contraction and relaxation. The contraction has its origin in the cardia itself, while the relaxation has its origin in the central nervous system, the impulses being transmitted by the vagus. If the vagus is cut above the diaphragm a relaxation of the cardia follows; if cut high up in the cervical region the tonicity of the cardia is temporarily increased.

v. Mikulicz in 1904 stated that Ziemmsen, as far back as 1873, collected 17 cases of idiopathic dilatation of the oesophagus and that at this time over 100 cases could be collected from the literature. To Lichtenstein, Strümpell, Meltzer and Rumpel he gives credit for the first important knowledge on the subject. Mikulicz here devotes himself chiefly to the pathology and therapy. It is easily differentiated from carcinoma, old scars of the oesophagus, etc., and is characterized by a dilatation of the lower two-thirds of the oesophagus which may take on immense proportions, even up to containing one liter. The dilatation is usually pear-shaped, the upper portion usually being the younger portion. The condition is also characterized by "kardiale dysphagie" and oesophagitis, due to the constant irritation. It is this that causes many of the unpleasant symptoms. von Mikulicz recognized at that time five theories as to the origin of this so-called idiopathic dilatation. (1) Primary cardiospasm (Mikulicz and Meltzer), (2) primary atony of the oesophagus musculature (Rosenheim), (3) the simultaneous spasm of the cardia and paralysis of the circular muscles due to vagus paralysis (Strauss), (4) congenital tendency (Fleiner), (5) primary oesophagitis (Martin).

As early as 1882 von Mikulicz considered the primary cardiospasm the chief etiological factor and even at this time, 1904, he saw no reason for a change of belief, adding, however, that there were concomitant factors and based his beliefs upon physiological observations. The oesophagus within the thorax is a long, open tube containing air. There is a negative pressure on inspiration, varying from 9 mm. to 20 mm. of water, depending upon the degree of inspiration. On expiration, on the other hand, there is a positive pressure, which, upon coughing, etc., may be greatly increased. The cardia is normally closed through the normal tone of the circular muscles and a valve arrangement. The negative pressure in the oesophagus and positive pressure in the stomach keep this valve closed. When the positive pressure in the oesophagus overcomes that in the stomach the valve is opened. Fluids need only be started downward in the oesophagus and through their own weight are sufficient to open the cardia. When cardiospasm occurs there is first a hypertrophy in an effort to overcome the spasm and then a dilatation. In the first stage the difficulty is greatest upon attempting to swallow liquids, while solid masses are easily carried through; in the second stage solid masses cannot be carried through while liquids may be. It is interesting to note that the possibility of forcible dilatation occurred to Mikulicz but he hesitated to employ a method which might result in

the tearing of tissues. He reports several cases in which he did a forcible dilatation through a gastrostomy opening with satisfactory results.

Rosenheim presents a very interesting review of the entire subject with a report of cases under the title of "Dilatation of the Oesophagus Without Anatomical Stenosis, So-Called Idiopathic." He attributes the condition primarily to an atony of the muscles of the oesophagus, resulting in a dilatation, and also the occurrence of a cardiospasm, in other words to a double disturbance of innervation. He calls attention to the fact that the condition may be long interpreted as a gastric disturbance before the dysphagia attracts attention to the oesophagus as a cause. In arriving at a diagnosis, the sound or stomach tube reveals the most important points. The obstruction with which it meets, the removal of contents of a neutral or slightly acid reaction, at once attract attention to the existence of a dilatation of the oesophagus. The oesophagoscope also aids in the diagnosis. It reveals the presence of a sac and an inflammatory condition of that sac. He also enters into the question of the differential diagnosis between dilatation of the oesophagus, diverticulum, etc., and enters into a discussion of the treatment of the condition through a stretching of the spasm by means of a rubber balloon at the end of a sound. Rosenheim was one of the first to use this method and to him and Strauss belongs much of the credit for substituting this comparatively simple and harmless method for that of surgical interference.

Sippey and Plummer in this country have worked along the same lines as Strauss and Rosenheim in the treatment of cardiospasm. The latter presents a report of some forty cases in which very satisfactory results were obtained. He reviews carefully the literature on the subject as to the etiology, symptomatology, treatment, etc., recognizes three stages in the development of cardiospasm; first, in which the peristaltic contraction of the oesophagus is sufficient to force the food through the spastic cardia, characterized clinically by discomfort, pain, choking sensations, etc. Second, in which the peristaltic force of the oesophagus muscles is no longer able to overcome the resistance of the contracted cardia and the food is immediately regurgitated; third, in which the oesophagus begins to give way and the dilatation is rapid. This stage is characterized by the retention of food which is regurgitated at irregular intervals. The symptom complex is almost pathognomonic and may also be divided into three stages, first, cardiospasm without food regurgitation; second, cardiospasm with immediate food regurgitation; third, cardiospasm with dilated oesophagus, the retention of food and its regurgitation at irregular intervals. Of the cases reported seven were observed during the second stage and thirty-three during the third stage. The method of treatment employed by the author does not differ materially from that recommended by Strauss, Rosenheim and others, consisting in the forcible dilatation of the cardiospasm with rubber balloons. The author, however, has an original method of employing it together with a manometer to determine the degree of pressure used. The results reported by him are highly satisfactory.

(The writer has employed this method not only in the treatment of cardiospasm, but in other benign obstructions of the oesophagus as well with great satisfaction. He finds, however, any complicated manometer connections entirely unnecessary, employing a large glass syringe such as is used in bladder irrigations, measuring carefully each time the amount of water used in obtaining the pressure and relying in a great measure, as must always be done, upon the patient's sensations for the degree of pressure used.)

INTESTINAL FERMENTATIVE INDIGESTION.

A REVIEW OF RECENT LITERATURE.

By ALBERT E. TAUSSIG, M. D.

1. INTESTINAL FERMENTATION AND THE USE OF TEST DIETS IN THE INVESTIGATION OF INTESTINAL FUNCTIONS.—Schmidt (*Deutsch. Arch. f. klin. Med.*, 1908, Vol. 92, Nos. 5 and 6).
2. THE FUNCTIONAL EXAMINATION OF THE INTESTINE BY MEANS OF A TEST DIET. 2nd Edition, 1908.—Schmidt.
3. ON INTESTINAL FERMENTATIVE DYSPEPSIA.—Meyer (*Deutsch. Arch. f. klin. Med.*, 1908, Vol. 92, Nos. 5 and 6).
4. A NEW FERMENTATION TUBE FOR THE DETERMINATION OF FÆCAL FERMENTATION, ETC.—Muenzer (*Arch. f. Verdauungs Kr.*, 1908, No. 1).
5. SAHLI'S DESMOID REACTION, SCHMIDT'S TEST DIET AND EXAMINATION OF GASTRIC CONTENTS.—Tottmann (*Muench. med. Wochenschr.*, 1907, No. 52).
6. THE COMMON BACTERIAL INFECTIONS OF THE DIGESTIVE TRACT, ETC., 1907.—Herter.

Some seven years ago the proctologic studies of Schmidt and Strassburger called attention to a variety of intestinal disturbance so constantly associated with specific changes in the stool as to warrant setting it up as a definite disease. Nevertheless the concept of Intestinal Fermentative Dyspepsia, as it was called, did not receive general recognition until the recent work of Schmidt, Meyer and Herter again called attention to it. Subjectively it is characterized by very definite complaints on the part of the patients. These consist in rather severe abdominal pain, usually localized about the navel, intestinal rumbling, more or less meteorism, while the bowels may be either loose or constipated or indeed constipation may alternate with diarrhoea. Gastric disturbances are not constantly present; vomiting rarely occurs while nausea and anorexia are more frequent. A history of stomach trouble preceding the intestinal affection may usually be obtained. Constitutional disturbances are usually limited to a feeling of languor, general malaise, dizziness and loss of weight. It is an extremely chronic affection, remissions alternating with periods of comparative well-being, but acute exacerbations are rather unusual.

In children the clinical picture is somewhat different. Herter gives a vivid description of it in his great work on Bacterial Infections of the Digestive Tract and groups it with what he calls The Indolic Type of Excessive Intestinal Putrefaction. It may be characterized as the marantic, large-belly type of chronic intestinal indigestion in children. This condition has long been known to clinicians as an extremely obstinate form of digestive derangement, manifesting itself in a distinct retardation of growth (usually without much mental retardation), in distension of the abdomen by gas, flatulence, intolerance of carbohydrates and voluminous, light-colored, usually gray and fatty stools containing much gas. In many of these children there is excessive sweating of the

head. Another characteristic feature is the readiness with which fatigue comes on. A child of six or eight years of age will show fatigue after a very short walk and will manifest a want of interest in exercise and play. If the trouble comes on during infancy there may be considerable delay in the ability of the child to stand or walk without support, and a child of six years or over may be unable to go upstairs except by a kind of creeping motion. Mentality may be normal and one is not infrequently struck by the contrast between the sharp wits of these children and their physical retardation.

In adults there is usually no impairment of strength except where the indigestion has developed out of a previous anemia or a functional neurosis. A physical examination reveals nothing very definite. The tongue is often coated but fetor ex ore is rare. The abdomen is more or less distended and diffusely tender on palpation, especially about the navel or just to its left. The epigastrium is usually not tender to pressure. The examination of the gastric contents gives no constant results though subacidity is not unusual. The urine usually contains much indican, especially in children, and the ethereal sulphates are greatly increased in quantity.

It is the stools however that show the most characteristic changes. Their consistency is usually mushy, of a yellowish color and strongly acid. They are foamy, full of gas-bubbles and smell strongly of butyric acid. Unchanged bile pigment is sometimes present, more frequently large amounts of hydrobilirubin. For a definite diagnosis, however, it is essential that the stool be examined while the patient is on a Schmidt test diet. Formerly Schmidt insisted upon a rigid dietary in which all the constituents were carefully doled out by weight and which remained unchanged day after day. This had the disadvantage of being practicable only in a well regulated hospital. It was often felt to be unpalatable, especially to Anglo-Saxon patients, and occasionally led to refusal of food on account of complete anorexia. In his last publication, however, he states that he obtains equally good results with a more elastic dietary of which the only indispensable constituents are:

1. A sufficient quantity of milk (one to three pints) which may, if desired, be used in the preparation of other foods.
2. About 100 g. wheat bread (rolls, toast, crackers, etc.).
3. A goodly portion of mashed potato.
4. A quarter of a pound of hashed beef of which at least a portion must be eaten raw or nearly so.

A sample dietary based upon the above would be as follows:

Breakfast:—A pint of milk, tea or cocoa (the latter two, if possible, served with a good deal of milk), one roll (or a corresponding amount of white-bread, toast or cracker), butter and one soft boiled egg.

During the forenoon:—A dish of strained oat-meal gruel with milk or flour-soup or porridge (salt and sugar ad libitum).

Dinner:— $\frac{1}{4}$ lb. well chopped, lean beef with butter and salt, broiled so that the interior remains raw; a portion, not too small, of mashed potato, smooth and free from lumps.

During the afternoon:—The same as for breakfast but without the egg.

Supper:—A pint of milk (or a plate of soup such as was given during the forenoon), a roll with butter and one or two eggs, soft-boiled or scrambled.

These five meals may be shifted about at the convenience of the patient and they may be sometimes made more palatable by conceding a

little wine, a little weak coffee, beef-tea at noon, and a little finely hashed roast veal for supper. Other changes are permissible provided the four essential ingredients mentioned above are retained and nothing is added that might affect the stool.

Such a diet if rather monotonous is reasonably palatable and sufficiently nutritious. It sets the various ferments of the digestive tract a definite task to perform and from the result of their activity as seen in the stool, a fairly accurate notion of their functional activity can be obtained. In typical cases of intestinal fermentative indigestion, the resulting stool shows very constant abnormalities. Macroscopically it is of a mushy consistency, yellow in color and acid in reaction. It usually contains gas bubbles and may be foamy, though this is not always the case. Microscopically, there is no great amount of connective tissue if the gastric juice is adequate and the muscle fibres as well as the fat are well digested if the pancreas functionates normally. There will however be found many potato cells which usually contain unaltered starch, as shown by the iodine test; the latter however will fail if, as is sometimes the case, the starch has been nearly or entirely dextrinized. A more certain test of the failure completely to digest the starch, characteristic of this disease, is available if Schmidt's fermentation apparatus is used. This consists of a small wide-mouthed bottle with a perforated stopper through which a glass tube leads into an inverted test-tube filled with water. This test-tube is again connected with a second empty tube into which the water from the first one may escape if displaced by gas. The stool, rubbed up with a little water, is placed in the bottle, the apparatus is connected and placed in an incubator. A plentiful evolution of gas, within twelve hours, is significant of this type of indigestion. Normal stools often produce a little gas and proteid decomposition may cause a plentiful gas formation after twenty-four hours or longer, but a stool that will produce sufficient gas to displace one-third or one-half of the water in the first tube, within twelve hours, is extremely significant as to the presence of the intestinal affection under discussion. This will especially be the case if the stool itself has meanwhile become paler in color, intensely acid in reaction and has developed a marked odor of butyric acid.

As regards the pathology of this disease, there is every reason to conclude that it consists in a diminished functional activity of the tubular glands of the small intestine. While gastric digestion is often impaired, as shown by an examination of the stomach contents and by the presence of connective tissue in the stool, this complication is by no means constantly present and typical cases of intestinal fermentative indigestion may show evidence of perfect gastric digestion. Liver and pancreas too usually functionate normally. That the affection has no connection with an intestinal catarrh is shown by the absence of mucus in the stool and of the excessive putrefaction which is so constantly present in catarrhal conditions of the small intestine. Apparently only one case of intestinal fermentative indigestion has come to autopsy, that reported by Schmidt, in which the stomach, liver and pancreas were normal and the intestinal contents contained little more than normal quantities of mucus. By exclusion we are forced to lay the diseased condition at the door of the intestinal glands.

The treatment consists essentially in the withdrawal of carbohydrates from the dietary. Schmidt's test diet contains relatively small amounts of starch and in mild cases a distinct improvement may be noted while the patient is under observation on this diet. In severer cases, the

starches must be entirely withdrawn and the patient put to bed. Warm applications to the abdomen are of service and, where there is gastric disturbance, this must be treated, large doses of HCl being given in anacidity and belladonna preparations in hyperacidity. Gastric lavage is sometimes useful and abdominal massage may add to the patient's comfort. Laxatives are rarely needed.

Under this regimen, improvement is usually prompt, especially in adults. All the disturbances, subjective and objective, may disappear in a few days or weeks. Moreover it often happens that, little by little, the power to digest starches returns. The limit of tolerance of starches is sharply defined and may be estimated by systematic stool examinations just as by urine analyses in diabetes. The dextrinized flour preparations (crackers, toast, etc.) are usually borne best. Somewhat later, the patients are able to take white bread, farina and rice. Last of all comes the ability to digest potatoes, mashed or in puree-form. Potatoes otherwise prepared are hardly ever tolerated.

In children, according to Herter, the prognosis is much less constantly favorable. The treatment in general is the same. Starches should be permitted in only very small amount and chiefly in the form of well-cooked rice or hominy or breakfast biscuits. It may be advantageous for a time to peptonize the milk in order to secure early absorption. All meat should be given in a finely divided form. It sometimes seems best, in children as old as five or six years of age, to allow only two meals in the course of the day, these being rather generous. A great deal of rest is necessary for these children and they should not be permitted to play or walk to the point of fatigue. Patients of the class under consideration often do badly in cold weather, probably because they cannot afford the caloric loss to which they are then subjected. Where this is the case a period of residence in a mild winter climate is helpful. Improvement is sometimes so slow that every one concerned with the case may become discouraged, but it is certain that a high degree of improvement can occur even after several years of extremely slow progress. In order to secure this improvement, however, it is impossible to make concessions in regard to diet, and the policy of largely excluding carbohydrates must be enforced. It cannot be denied that even in those cases in which the best results are obtained there is commonly a retardation in growth which is still manifest at the time of puberty. Moreover, there is no doubt that persons who have suffered from this affection during the period of childhood become especially susceptible to intestinal disorders during later years and seldom attain robust health.

DIAGNOSTIC AND THERAPEUTIC NOTES.

COLLES' AND PROFETA'S LAWS IN THE LIGHT OF MODERN SERUM RESEARCH.—J. Bauer (*Wien. Klin. Wochenschr.*, 1908, No. 36), examined 201 newly-born babies with Wassermann's reaction, the reaction being positive in 22 cases. All the children with symptoms of lues and those that were suspected, showed a positive reaction, as did the mothers of these children. Bauer further examined the blood of the foetal and of the maternal placenta. In four cases a positive reaction was found in foetal and maternal blood. In only two cases a positive reaction of the maternal blood could be demonstrated. He concluded from these examinations, that the mothers of hereditary luetic children suffer *always* from syphilis and that healthy children from luetic mothers are free from latent lues. These latter children never showed a positive reaction. These facts show that the laws of Colles and Profeta are not true.

ATROPIN TREATMENT IN ULCUS VENTRICULI.—Certain cases of ulcer ventriculi, complicated with hypersecretion and muscular insufficiency are not curable by diet or even operation. D. von Tabora (*Muench. med. Wochenschr.*, 1908, No. 38) obtained good results in these cases during several years by administering atropin internally. The atropin acts as an antispasmodic and narcotic and diminishes the secretion. He gives one milligram morning and evening hypodermically, sometimes three milligrams daily, for 4 to 10 weeks. He starts his treatment with fasting for a few days and follows with the diet of von Leube, while the patient keeps perfect rest. The treatment never failed entirely. The hypersecretion ceases, the acidity diminishes, the insufficiency and spasmodic pylorus contractions disappear. Patients stood the treatment well, suffered only from a dry throat and accommodation paralysis.

STOMACH SYMPTOMS IN MASTURBATION.—Stomach symptoms due to masturbation do not always cease when the patient has conquered his bad habits. In these cases A. Siegmund (*Muench. med. Wochenschrift*, 1908, No. 31) treats the anterior part of the left middle concha (stomach-pain point of Fliess). This point is found in these cases, especially during an attack of pain, to be very sensitive to the touch, swollen and readily bleeds. Touching this point with a 20 per cent. solution of cocain, eventually with adrenalin, stops the pain soon. In severe cases, etching with trichloroacetic acid crystals or resection of the anterior part of the concha, causes the pain and hyperacidity to disappear permanently.

If the patient starts to masturbate again, a recurrence of the changes in the pain-point will be noticed. Other symptoms—results of masturbation—will disappear also under this treatment of the concha.

CORRESPONDENCE.

PARIS LETTER.

(FROM OUR OWN CORRESPONDENT.)

The idea of the existence of glands unprovided with excretory canals and which pour their products of secretion directly into the general circulation, is one of those problems that has greatly modified our knowledge of physiology, pathology and therapeutics in the last few years. The discovery of the action of the thyroid body on the nutrition; the study of nutritive alterations in their relation to certain diseases, have been the point of departure of an incalculable number of works for which the clinic and the laboratory have furnished the material. And before long the physiological and pathological rôle of the parathyroid glands, of the thymus, of the hypophysis cerebri, of the suprarenal glands and the genital glands, will be mastered. Each of these glands has a distinct and precise physiological action in the summing up of the nutritive and functional equilibrium of the organism. But the particular function of each gland and of each sort of internal secretion, presupposes that the other glands react normally on it; and that the normal function of the thyroid body, for instance, is possible only when the other glands, which secrete internally, are themselves normal. Nevertheless, in practice it is relatively easy to recognize the particular signs of bad function in a determined gland. These signs are in effect sufficiently characteristic; they dominate the whole clinical picture to so great an extent that one can attribute to the syndrome, a real entity. The indications of an initial glandular disturbance appear in other glands as secondary troubles, which are not difficult to localize. But the problem becomes greatly complicated when two glandular chains present concomitant alterations. A recent work of M. Laiguel-Lavastine very well shows, at one and the same time, the absorbing interest and the difficulties of this phase in the study. The correlation of the internal secretory glands and their pluriglandular syndromes open up illimitable horizons to the internist and the therapist. It would appear that out of the study of this matter there should issue ideas of a more precise nature, in regard to what is now vaguely called individual temperament and constitution. It is impossible to give, in a short space, even a short sketch of the deep interest which attaches to the subject of the interglandular relations. The chapter of the glandular relations of the thyroid to the parathyroid bodies, the thymus, the hypophysis cerebri, the suprarenal capsules, the ovaries, the testicles and the prostate, has been the one that is of the greatest importance in recent works, and suffices to show that there are more or less direct correlations between the different ductless glands. These correlations attain their maximum of evidence in the pluriglandular syndromes, where the symptoms of an insufficiency of one gland are associated with the signs of an insufficiency or hyperactivity of one or many other ductless glands.

At the present time it is possible to outline a clinical picture of pluriglandular syndromes, such as a thyroidean predominance, a hypo-

physitic predominance and a genital predominance; but there are other pluriglandular syndromes which are not predominant, and for these, future investigations will no doubt throw further light on matters now obscure. A study of these facts shows that there exist between different ductless glands, correlations which manifest themselves, in the course of certain pathological conditions, by functional substitutions producing complex syndromes. Intoxications and infections are the habitual causes of glandular changes; nevertheless it is good logic to admit that in the cases where but one gland evidences signs of a lesion, the other glands may show, in their turn, secondary lesions, without these being necessarily due to an intoxication or an infection of the organism. A characteristic example of elective reaction that one altered gland may have on another is seen in the hypertrophy of the hypophysis cerebri following castration.

The ductless glands concur in maintaining an equilibrium of the different organic functions by diverting into the system the chemical agents, as yet unknown for the most part, but to which Starling has given the name of *vital principles*. Their clinical action is simple, for it is evident that these substances act neither in the fashion of a toxin nor in the fashion of an alimentary substance. As Brown-Sequard and d'Arsonval have said, the different cells in the human economy act conjointly, and through a mechanism other than the nervous system.

From a clinical standpoint where a glandular trouble is the only one, it is accompanied by other glandular disturbances which are not marked enough to manifest themselves as symptoms. If in these comparatively simple cases, there is already a difficult matter to contend with, one can readily understand how much more complex the problem becomes as regards pluriglandular syndromes when divers symptoms are but slightly manifest. The therapy of these pathological states is not less difficult than the diagnosis. In case the pluriglandular syndrome is dominated by a group of glandular symptoms, polyglandular opotherapy seems to give satisfactory results; but, it should not be forgotten, that in this treatment empiricism plays quite a part.

December 10th.

OBITER DICTA FROM FOREIGN JOURNALS.

A QUESTION OF DIET.

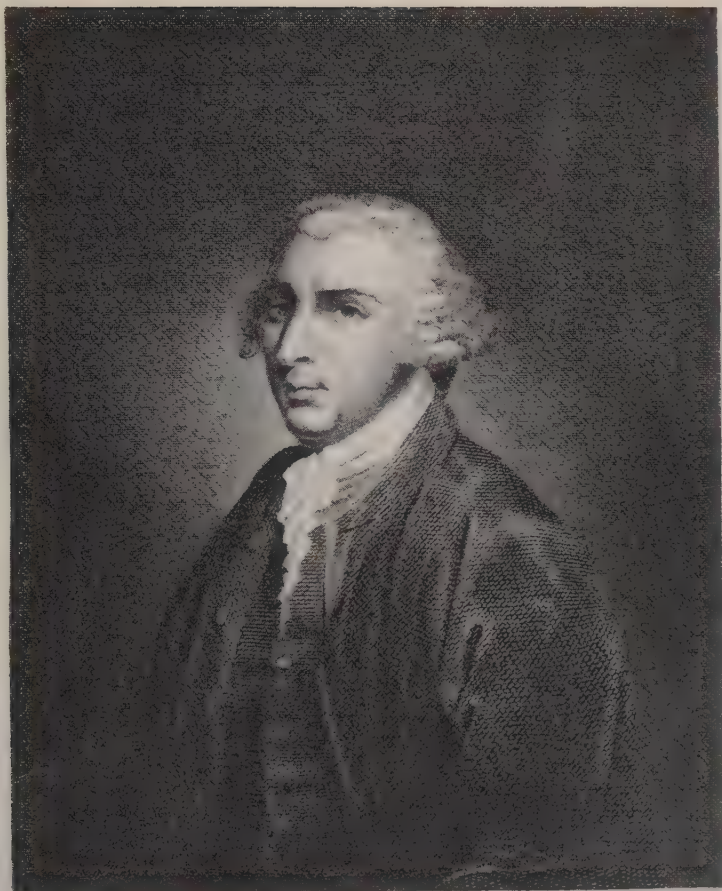
Dr. Ahmed Chérif has put to good use his knowledge of oriental languages in his historical study of Arabic medicine, "The Life of Ishaq," a work of prime interest to all students of medical history. One of the celebrated doctors of the ninth century was Ishaq, who was in practice at Bagdad, when he was called to Kairwan in Tunis, by the all-powerful, Ziadet Allah. As court physician he held full sway until there arrived in town a young Andalusian Israelite, who claimed to be a physician. Before long the newcomer ingratiated himself with the ruler and his position assured, he waged a bitter war against the aged savant. Whenever the latter interdicted a dish prepared for Ziadet Allah, the former authorized its immediate use, and vice versa; thus showing that even in the so-called days of cavaliers and courtiers, the medical profession was not free from the petty jealousies characteristic of more modern times. Ishaq, when he realized that his position as medical authority was questioned by another, was anxious to return to his former field of activity, Bagdad, but Ziadet Allah refused to sanction his wish although he had given him his written promise. One evening, at dinner, curdled milk was placed before the ruler. No sooner had he raised the spoon to his mouth than Ishaq exclaimed: "It will make you sick!" "Have no fear; eat as much as you wish," interposed the Israelite. Ziadet Allah hearkened to the latter's words,—and ate. Some hours after, he was decidedly indisposed, an attack of asthma occurring. When Ishaq was rudely awakened from his slumbers and told that his presence was demanded at once at the ruler's bedside, he said: "I forbade the eating of curdled milk. I was not obeyed. I know of no remedy for the ailment." A hundred pieces of gold were offered him to change his stubborn attitude, but he refused; later when a thousand pieces were offered, he showed the general weakness of mankind, for his stern resolutions were forgotten, and he hastened to the bedside of the exalted ruler. He ordered the application of ice, vomited his patient and pointing at the pieces in the indigested milk, said with no small degree of triumph: "If some of these particles had entered your bronchi before I was called to attend you, you would have died instantly." The despot, instead of showing gratitude toward his medical adviser, conceived an implacable hatred; the delay in getting assistance being the exciting cause. As a preliminary manifestation of his feelings, Ishaq's salary was stopped. To eke out a living, he opened an office in the town and soon saw with gratification that his worth was not unappreciated. The ruler, learning of his success, had him imprisoned but, despite the detention, patients flocked to the prison. Thereupon Ziadet Allah, greatly exasperated, decided on Ishaq's death. One night he sent for Ishaq and after outraging his feelings by heaping insults upon him, had him subjected to what surely must be considered an exquisite punishment,—the opening of the veins in his arm. During his agony, Ishaq, weak though he was, hurled these words at the tyrant: "You imagine yourself to be the greatest lord in all Arabia, but mark my words, before many days, you will fall from your high estate and the lowest of your subjects will not be as you, for I have for some time given you a poison which will deprive you of your reason." Needless to add that, after this fierce denunciation, the despot did not delay further proceedings to do away with his obnoxious subject. According to the author "the crucifixion lasted so long that a bird of prey made its nest in the body." Thus died one who was "celebrated not only on account of his knowledge of the composition of medicaments, but on account of the precision and certainty of his diagnoses."

HISTORICAL NOTES.

DR. TOBIAS GEORGE SMOLLETT.

The ranks of British novelists have to their credit a goodly array of masters of fiction who before they were won over by the blandishments of the imaginative art, practiced medicine in the humdrum way which falls to all the lesser men continuing in the toils of that self-denying vocation. To cite only a few names, there are Conan Doyle, the English Gaboriau, Charles Lever, whose books are too well-known to require mention here, and the greatest of all, the subject of this sketch. Now we often hear of the deadening effect which the vicissitudes incidental to the practice of medicine have on the imagination, but were we only to limit ourselves to a contemplation of the few names we have mentioned—there are many others which might be included—the conclusion would indubitably be that contrary to the accepted opinion, the yeoman's service exacted of those who have placed their feet on the first rung of the medical ladder, is not inimical to an efflorescence of the prime quality without which fictional writing is a drear waste of words.

That Tobias Smollett had a hard road to travel when he launched into the practice of medicine, all his biographers have made clear to us; but though his struggles to eke out an existence are in line with nearly all similar modern experiences, his lot was truly pitiable, for when he went to London in expectation of some appreciation of his worth as a physician, he found only prejudice because of his Scottish ancestry. True, Arbuthnot, Thomson, Mallet, and Mickle, though Scots, were favored by King and Court, but the future incomparable novelist met with none of Fortune's golden smiles. Oxford street was just as stony-hearted to him as, sixty years after, it proved to Thomas de Quincey. His dire want is best illustrated by the fact that instead of a partial realization of his ambitions, he was driven by the wretchedness of circumstances to accepting what to him must have been the acme of humiliation—the position of surgeon's mate on the ship of war, Cumberland, which was part of the fleet commanded by Sir Challoner Ogle in the disastrous expedition against Carthagen. But out of what we to-day look upon as an unmitigated insult to genius, came a description of all the horrors of the awful undertaking that shows beyond a doubt a humanitarianism that only the deeper reading of medicine can invoke, and a literary style that already foreshadows the coming novelist. "As for the sick and wounded," says Smollett, "they were next day sent on board of the transports and vessels called hospital ships, where they languished in want of every necessary comfort and accommodation. They were destitute of surgeons, nurses, cooks, and proper provision; they were pent up between decks in small vessels, where they had not room to sit upright; they wallowed in filth; myriads of maggots were hatched in the putrefaction of their sores, which had no other dressing than that of being washed by themselves with their own allowance of brandy; and nothing was heard but groans, lamentations, and the language of



T. BULLOCK, M.D.

despair, invoking death to deliver them from their miseries. What served to encourage this despondence was the prospect of those poor wretches who had the strength and opportunity to look about them. For there they beheld the naked bodies of their fellow-soldiers and comrades floating up and down the harbour, affording prey to the carrion crows and sharks, which tore them in pieces without interruption, and contributing by their stench to the mortality that prevailed." And in "Roderick Random" there is again enough of his medical experiences on land and sea, to harrow the contented mind into some appreciation of the tricks fortune played him in those years which philosophers consider the best in a man's life.

What caused a continuance of the undesirable quality of irascibility throughout his whole career, we are not in a position to say; but that his early experiences as a struggling doctor had some bearing on the matter, must be apparent to all who read of him between the lines. And though that prince of satirists, Laurence Sterne, in "A Sentimental Journey," characterized him as "the learned Smelfungus" because of his fault-finding and lack of adaptability, we of to-day should turn a kindly eye on his shortcomings. For despite what would mean to a less talented man insurmountable barriers to the desired clarity and mental composure for a correct interpretation of character, we see in his best books—in "Humphrey Clinker," "Peregrine Pickle," and "Roderick Random"—characterizations that hold their own against the greatest in the long line of English fictional portraits, and a boisterous humor that surely indicates what a great talent can do, to heal the wounds inflicted by an unkind Providence in that huge earthly threshing machine in which so many of the Unfit succumb during the arduous years of their apprenticeship.

SOCIETY PROCEEDINGS.

ST. LOUIS MEDICAL SOCIETY.

Meeting of November 7, 1908.

Dr. E. W. Saunders read a paper, entitled "Causation and Treatment of Infantile Convulsions,"* for which see page 13.

DISCUSSION.

Dr. George M. Tuttle thought that after the very exhaustive list of causes for infantile convulsions which Dr. Saunders had given, it would seem foolish to attempt to give a list of his own. But the idea he wished to present was that when the physician was called to a child in a convulsion, he must try to decide for himself the cause of the convulsion. He always put the case to himself in this way: that there were two general kinds of convulsions in infancy, those that might be termed functional and those of an organic nature. The functional convulsions included those due to local reflexes and the so-called toxic convulsions. Of the reflex convulsions there were several, *e. g.*, those occurring from teething, phimosis, foreign bodies in the ear, or fright. The toxic convulsions included those caused by the absorption into the system of toxins, or the decomposition products of food, or the metabolic products of tissue waste. On the other hand, were the organic convulsions due to disease or injury of some kind in the brain. This made a very practical distinction between the different kinds of convulsions. It was practical, for in a general way much might be done for convulsions of the first class, but very little for those of the second class. When it was possible to determine with which class one was dealing, it was very helpful in the treatment. As to the things that helped in making such a differentiation, one of the most important was the age. When a baby was seen in the first few weeks of life, an organic condition was suspected, cerebral injury or asphyxia or something of that kind. He wished Dr. Saunders would state the latest time after birth one might expect convulsions due to some cerebral injury at birth to first show themselves. After this period was passed, there was a period running up to two years of life during which, according to physiologists, the reflex centers were the most important part of the child's nervous system and the inhibitory centers not developed. During this period convulsions were very likely to be functional. After these two years had passed, then the convulsions were more likely to be organic. So far as the treatment of convulsions was concerned, he was glad to hear Dr. Saunders find fault with the hot bath. He was thoroughly convinced that the hot bath, when the child was having a convulsion with fever, was harmful. Certainly the access of the fever was the cause of the convulsion, and if one added to the temperature by giving a hot bath, it was simply adding to the cause of the convulsion. It was well, first, to take the rectal temperature. In the case of a child with a temperature of 104° to 106°, it was all foolishness to give a hot bath. The hot bath did nothing to relieve the congestion in the brain and might add to the dangers in the case. Probably the reason the hot bath was so much used was because mothers asked what to do for a child if it had a convulsion, and the physician told her to give a warm bath in order to give her something to do until he arrived. Often the physician saw a child having convulsion after convulsion and he never thought of giving baths for these persistent convulsions. Another thing, when one gave directions to a family, he should not say "give a hot bath," he should say "warm bath." Another thing objectionable was the unnecessary meddling with the patient. He had never forgotten the impression made upon him by an experiment of one of his professors. Two frogs were given a lethal dose of strychnine, one was sent to the dead house and the other to the laboratory. The next day the frog sent to the laboratory was dead, but the one from the dead house

*Read before the St. Louis Medical Society, November 7, 1908.

was alive. When the baby was left absolutely alone, it did more good than all the warm baths. From his own experience he believed that during the convulsive paroxysm chloroform was helpful in enabling the physician to give the child a permanent antispasmodic, as bromide and chloral, which could not be given while the child was shaking with a convulsion. This was the first time he had ever heard anybody criticize the hot bath and he was very glad that it had been done.

Dr. John Zahorsky regarded the etiologic classification of convulsions, as given by Dr. Saunders, as a great improvement scientifically, but for practical purposes it seemed rather cumbersome. His own method of determining the cause of convulsions was somewhat different. First, he tried to discover what increased the hyperexcitability of the child. The rectal temperature should be taken at once. If the temperature is over 104° , it could be said that either the fever, or the toxin producing the fever, was sufficient to cause this hyperexcitability, and after applying the necessary remedial measures to subdue the attack, the cause of the fever should be sought just the same as in a non-convulsive fever. The great difficulty here, at times, is to exclude some cerebral infection, as meningitis, when an infectious process is not located promptly in some other organ.

If little or no fever is present, we must look for evidences of that clinical syndrome now termed spasmophilia. This is by far the most frequent cause of a nervous and muscular hyperexcitability which predisposes to repeated eclamptic attacks. Only recently has this clinical syndrome been studied, and Heubner gave the name spasmophilia to that large group of cases—laryngospasm, tetany, eclampsia,—depending on some nutritive disorder. It is very doubtful that rickets alone is the pathologic condition back of the spasmophilia diathesis. Stoeltzner's claim that this tendency to spasms was caused by a calcium poisoning of the nervous system has been positively disproven. Finkelshtein was able to show a connection between this hyperexcitability of the nervous system and cow's milk. At any rate, the irritability decreased very much when cow's milk was discontinued, and the convulsive seizures ceased.

Dr. Saunders applied the term spasmophilia to an entirely different class of cases; let him tell us why. When no nutritive disturbance is present and no fever exists, two conditions must be considered: acute nephritis and epilepsy, or other organic nervous disease.

Dr. Zahorsky believed that in the light of recent researches on spasmophilia, the power of external irritation as a cause of convulsions would have to be placed in a subordinate position. Our theories on reflex causes will have to be changed. He did not regard an adherent prepuce as an important cause, even in repeated convulsions. Several years ago he treated a little boy who had convulsions with each febrile attack by circumcision. The convulsions ceased, but the febrile attacks ceased also. Certainly the fever was not caused by the phimosis. The tendency to convulsions naturally ceases at 3 or 4 years and great care must be taken in ascribing their cessation to the last remedial measure.

Some of Dr. Saunders' remarks were distinctly new and interesting. Some of them, however, need more proof; especially his theory of retention toxicosis at the onset of an acute disease. Metabolism was often diminished at the beginning and might explain the lessened excretion of solids in the urine.

Dr. W. L. Johnson thought Dr. Zahorsky seemed to doubt that circumcision would relieve spasms in any case but he had seen several cases that appealed to him as so successful that he could not get away from the idea. Dr. Saunders had quoted one of these. The little boy had repeated convulsions until the doctor and himself feared that they might be epileptic. He was operated upon and had not had a convulsion since that time. He had in mind two similar cases. One was a child six months of age and, until he was three years of age, every time he had a temperature of 102° or 103° or over, he would have convulsions. At the age of three years he was circumcised and shortly afterward had a fever of 106° and had absolutely no convulsion. Another case, a child until four years of age had had convulsions every time he had a fever, but since circumcision he had never had another convulsion. He had in mind still another case, a boy of fourteen years who had had convulsions that were considered epileptic by other physicians. The convulsions occurred chiefly when he was looking at the blackboard and that gave Dr. Johnson the clue to the cause. The patient was sent to Dr. Semple and the vision corrected. The boy was circumcised and had never had any other convulsion. The most potent factor in this case was probably the eye-strain. As

to the specific toxins that might cause convulsions, they were something of which little could be said, but one could not very well assign convulsion to a specific toxin. He doubted if it would ever be possible to determine whether there was any particular toxin that caused the convulsions. He was not yet prepared to discard the warm bath. In many cases where a child had a temperature of 105° or 106°, it was cold on the surface and the logical thing to do was to bring the surface circulation to a normal condition. Do we not warm the adult up when he has a chill, even if the temperature be very high? Many of these convulsions are the equivalent of a chill. A warm bath, too, had a beneficial effect in bringing about a relaxation and that was opposed to the convulsive tendency. He had never used chloroform that he could recall. He was afraid of it, fearing that the child might die while using it, not from the chloroform, but from the convulsion. Morphine was a very safe drug and could be given even to an infant safely, hypodermically, of course. He had found that nitroglycerine, hypodermically, as a vaso-dilator, had a happy effect. In one case in which a rachitic child had had some seventy-five convulsions in one afternoon, the nitro-glycerine apparently stopped these convulsion. Chloral, while a sedative, was in small dosage also a vaso-dilator and for that reason was especially helpful.

Dr. William Shirmer Barker took up the subject of convulsions in children followed by sudden death where the etiology was very obscure. Occasionally one was called to treat an infant in convulsions of such a grave nature that before anything could be done, in a few minutes the child dies in the spasm. Such cases were very embarrassing to the physician, and search how he may it would often be impossible to find the cause. Several of these cases had occurred in his own work, and some of them he had been able to study at post mortem. In one case a child died within four or five minutes of his first entering the sickroom and on inquiry into the history he had succeeded in making it fairly clear that there was a periodicity in the spasms which warranted making a diagnosis of a case of malarial intoxication. It is a matter of common observation that in infants a convulsion instead of a chill often occurs in malarial poisoning. Another case was a child two and a half months old. While examining the fauces with all gentleness this child had a convulsion and died within a minute. A post mortem was obtained and the thymus and adjacent glands were found very large, evidently having caused death by pressure. It was easy to see the insurmountable difficulty a case like this would present if a post mortem had not been allowed. Each of those who had spoken seemed to have his preferred classification of spasm cases for practical purposes. In his own work the speaker made a classification somewhat as follows: (1). Spasms incidental to simple fevers or slight indigestion. (2). Those due to primary cerebral disease, such as cerebrospinal meningitis, etc. Incidentally, Dr. Barker asked Dr. Saunders to state whether in the treatment of cerebrospinal fever he had used the Flexner serum and with what success. (3). Then there was the recurrent spasm, due to what might be called the spasm habit, as a type of which we might cite the spasm of infantile epilepsy or that of hysteria. This would leave for a fourth class the large group of rachitic cases and for a last class, those having such special causes as pressure on the trachea or sexual organs or irritation of some foreign object. The Munich Clinic recently reported 100 cases of recurrent spasms with a mortality of 72 per cent, and what is rather surprising is the statement that 45 per cent of these infants were breast-fed. These cases were followed up and thus kept under observation for several years. Regarding the immediate treatment of infantile spasms with chloroform, he felt that it had advantages. It produced a muscular relaxation and had very generally resulted in prompt improvement under his use. He believed that it could be used in children with comparative safety, though not with the almost perfect safety in many cases of parturition. As to the hot bath, he believed that it often did harm. He remembered being called to see a child at some distance. He had telephoned them to give the child a warm bath if the child was cold or a cool bath if his body was hot, but they did not understand and gave it a prolonged hot bath, undoubtedly prolonging and aggravating the convulsive state thereby. But he thought it well to remember that even the warm bath, if not prolonged, did lower the temperature, though, it was true, not to the same extent as the cool bath.

Dr. Lippe agreed with Dr. Tuttle that one must have a working basis for the treatment and his classification was similar to Dr. Tuttle's. He also got the age of the baby and tried to determine if there was an organic cause, and the first thing he did was to take the baby's temperature. The skin might

be cold and still the temperature be very high. With a temperature of 102° or more there might be an intoxication as the cause of the convulsion. In any case the first thing to do was to flush the bowel. In a febrile case with high temperature, a cold pack was the thing to do. A hot bath only raised the temperature and increased the toxicosis. He recalled seeing one case, a markedly rachitic baby. The diet was corrected and one morning the father brought the child to him and stated that it had had a convulsion. While he was looking at the child it had another convulsion and died. The treatment of that condition should have been begun long before. In fact, treatment should begin before the convulsion in these rachitic cases. Not merely those cases with enlarged epiphyses, etc., but those infants that were restless and sweated about the head. Those, however, were rickety, nervous rickets, and ought to be properly treated. As to phimosis, he believed that there were cases in which the retention of smegma would, in a neurotic child, be a factor in the development of convulsions. He remembered one case, a well-fed little boy who had convulsions, and who had been taken to a number of physicians without relief. He could find nothing to account for it, but the child did have a long prepuce and he suggested having him circumcised. After the operation he never had another convulsion. He had had a case of thymic asthma and this child had recurrent convulsions due to pressure of the enlarged thymus. Surgery was advised, but was not tried. Most people were afraid of morphine in a small baby, but if given in a proper dose it was a life-saver, just as it was in cholera infantum. In cholera infantum there was nothing that would have so marvelous an effect as a hypodermic of morphine, and the effect was quicker than chloroform. One must consider the treatment of the condition after the convulsion was stopped. Then one should inquire into the underlying cause. Of course it was not always possible to carry out experimental work. And it was very difficult to get the urine from a very young baby, and most men were not able to examine urine as to its toxicity, etc.

Dr. Zahorsky said that instead of using chloroform he had been using ether, especially when the child was very ill. Ether was stimulating and was to be preferred in repeated convulsions when the child was in a very weak condition.

Dr. Jules M. Brady, speaking of the postural treatment of convulsions, said that in these cases, as has been demonstrated by Kussmaul and Tenner, there is an acute anemia of the brain. To overcome this, Koplik of New York recommends this procedure and claims satisfactory results: The child's head is lowered, the buttocks raised and the clothes freely loosened. The speaker said he had had occasion to resort to this treatment in only one instance, that of a boy four years of age who had passed through several attacks of convulsions. The result was favorable and he advocated the adoption of this method when the convulsions are repeated. To-day so many infants are fed on artificial foods that a large number of infants will be found suffering from rickets. In every case of infantile convulsions, a rigid examination should be made for rickets; in many cases, where some trivial condition is the exciting cause, rickets will be found in the background. As to why infants are so predisposed to convulsions, Saltmann made experiments on dogs, cats and rabbits and came to the conclusion that the inhibitory centers of the brain of an infant are poorly developed, while the peripheral sensory irritability is increased.

Dr. Saunders, in reply to Dr. Tuttle's inquiry about the birth injuries, said that it was a fact that children after a difficult labor long afterward showed permanent evil effects, so that it was impossible to say just how late convulsions might appear as a result of birth injuries. But if there had been no symptoms of pressure or hemorrhage early in the child's life, he would be disposed to look for some other cause for the convulsion occurring a few weeks later. In reference to chloroform it was a known fact that it was a protoplasmic poison to the young organism. That was one strong objection to it. Then, in any organism at any age, it caused a sub-oxidation as long as administered. If his theory was right that suboxidation might be the cause of convulsions, then chloroform was only adding fuel to the fire, or rather, it was taking away the fire so much needed. The case of Holt's cured by oxygen was very suggestive. In the treatment of eclampsia, chloroform was in apogee, and morphine was found to be more effective and satisfactory. As to the classification, he had expected to be opposed. After much thought and reading, he had adopted this because he thought the present classification was faulty in the extreme. Take, for example, that pedantic word "spasmophilia." It was originally used in a physiologico-etiological sense. And what was gained thereby? It had not advanced nosological knowledge a bit farther. Then why

use it to denote a large class of cases of which much more was known than that term would indicate. Rickets means more than spasmophilia. Then why should spasmophilia be taken as synonymous with tetany, as one speaker implied? Tetany was a nervous form of rickets. Many children developed bony or cartilaginous rickets without any nervous symptoms at all, but there was a class of cases in which the weight of the dystrophy fell upon the nervous system. So why not call it rickets instead of spasmophilia? Why exchange what was already known for what was unknown? Therefore, he had reserved the term spasmophilia for cases that were not understood, for the word explained nothing and should be left for the group of cases, the cause of which was unknown. Taking cases of convulsions due to cerebral inanition, chronic or acute, and classing them under the term spasmophilia, adds nothing to our knowledge of their etiology. He believed it wiser to investigate these dystrophies and put them under their proper heading. In 1896 he had published the description of a group of dystrophic convulsions terminating fatally, due to long continued feeding upon certain patent dry foods. The symptoms were nausea, occurring suddenly in apparent health, the loathing for that particular food being so great that the sight of the bottle would induce retching, insomnia, a wild-eyed, terrified expression of countenance, the scene closing with convulsions and death within a day or two. A prompt recognition of the nature of the case, leading to a change of food, and the use of analeptic measures, may prove life saving. As to phimosis, he did not think the conclusion could be avoided that it was the exciting cause of convulsions in many cases and that circumcision put an end to the convulsions. But he had seen cases in which they ceased for a time and the child afterwards became a confirmed epileptic. Whenever a child had convulsions from a reflex cause, he always feared that it might later become epileptic. In proof of the pathogenic potency of phimosis, he referred to several cases which he had published twenty-five or thirty years ago in the "Alienist and Neurologist," entitled, "A Painful Abdominal Neurosis Due to Adherent Prepuce." Although convulsions did not occur in any cases of this series, the long continued paroxysmal pains were at once relieved by operation. As to convulsions and the use of cow's milk in certain cases, it was a fact that in Graves' disease the symptoms could not be abated so long as the patient ate meat; and as soon as animal diet was stopped improvement followed, showing the intimate relation between diet and specific autointoxications. Take, for example, also the diet of kittens; every householder knew that kittens fed on meat almost surely had convulsions. There was such a thing as idiosyncrasy to certain foods in babies as well as in adults. He cited the case of a child who had convulsions until he was given taka diastase with his meals. It was evidently a toxic intermediary digestion product of starch that made the child spasmophilic. As to metabolism in fever, there was a diminished metabolism, but there was also a faulty metabolism. In the initial high temperature there was especially faulty metabolism. Later the system adopted itself better to the condition of intoxication. At first the kidneys did not excrete, later they began doing their work. There were three factors that must be taken into consideration in every case of high temperature. First, was the retention toxicosis, strictly speaking, faulty metabolism, giving rise to catabolic products much more toxic than normal, and there might be, succeeding the initial failure of metabolism an increased metabolism. As to the nitroglycerine he had used it in one or two cases several years ago and, though he had never used it since, he did believe it was of value and should be remembered. The Flexner serum was difficult to get and he had had no case of true cerebrospinal fever since its introduction. He believed that many cases of sudden death were due to thymic asthma. He had read of one case in which an incision was made as for tracheotomy and the thymus pulled upward and fastened. But the curious thing in these cases was that after death there had never been found any evidence of pressure on the trachea. Colon flushing was certainly very valuable, quickly reducing the fever and removing the intestinal poisons.

BOOK REVIEWS.

ANNOUNCEMENTS.

E. B. Treat & Co., Medical Publishers, New York, start the new year with the following most important works:

SURGICAL DISEASES OF CHILDREN. A Modern Treatise on Pediatric Surgery. By Samuel W. Kelley, M. D., Professor of Diseases of Children, Cleveland College of Physicians and Surgeons. This volume occupies a distinct place in medical literature as it is devoted entirely to the surgical diseases of children and is the first yet written by an American on the subject. The author's special training amply qualifies him for the present work. An attractive and most instructive feature is the more than 300 illustrations, mostly of the author's own cases, under which are full descriptions, thus forming little clinics in themselves. Octavo, 750 pages, over 300 illustrations; cloth, express paid, \$5.00 net.

PTOMAIN POISONING. A Concise Exposition of the Etiology, Bacteriology, Pathology, Symptomatology, Prophylaxis and Treatment of Bacterial Food Poisoning, by Prof. Dr. A. Dieudonne, Munich, Translated and Edited, with additions, by Dr. Charles Frederick Bolduan, Bacteriologist, Research Laboratory, Department of Health, City of New York. 8vo, 125 pages; cloth, prepaid, \$1.00 net.

DIAGNOSIS AND TREATMENT OF DISORDERS OF THE BLADDER, WITH TECHNIQUE OF CYSTOSCOPY. By Follen Cabot, M. D., Professor Genito-Urinary Diseases, Post-Graduate Medical School and Hospital, New York. A manual of this phase of surgery supplementing the more pretentious volumes. 8vo, 225 pages, 40 illustrations and 1 colored plate; cloth, prepaid, \$2.00 net.

A TEXT-BOOK OF SURGICAL ANATOMY. By William Francis Campbell, M. D., Brooklyn, New York, with 319 original illustrations. W. B. Saunders Company, Philadelphia and London.

To aid in the sifting and establish the comparative values of anatomic facts as associated with practical problems in surgery, Campbell has produced this excellent work, realizing that an anatomic mind is as essential to a surgeon as is an aseptic conscience. He claims as the single purpose of his book the assistance to students and practitioners in mastering the essentials of practical anatomy. The book will show at a glance the way in which this purpose has been accomplished.

It is excellently illustrated with good anatomical plates that have a surgical significance in each instance. The letter-press and the sense of the text are clear and distinct, and simply put in the latter instance. It is a good book for surgeons also.

THE TREATMENT OF FRACTURES: WITH NOTES UPON A FEW COMMON DISLOCATIONS.

By Chas. L. Scudder, M. D., Surgeon to the Massachusetts General Hospital. Sixth edition, revised and enlarged. Octavo volume of 635 pages, with 854 original illustrations. Philadelphia and London: W. B. Saunders Company, Polished buckram, \$5.50 net; half morocco, \$7.00 net.

The new edition of Dr. Scudder's excellent work on fractures is like its predecessors in the conciseness of its style and the beauty of its printed pages and illustrations. In this edition especial attention is directed to the following: Obstetrical skull fractures of the newborn, fractures of the zygoma, of the malar bone, of the superior maxilla, of the head and neck of the radius, of the neck of the femur and of the carpal scaphoid.

The last edition was prefaced with the remark that the entire treatment of fractures of the femur was undergoing a change. We note in this edition that Dr. Scudder has called especial attention to the abduction method of treatment advocated by Whittman. This chapter in the new edition gives the best and most modern ideas regarding this particular fracture, in the clearest manner. Also the author has laid special stress on unreduced dislocations of the elbow, on acromioclavicular dislocations, on pathological fractures, on old fractures of the radius and on Volkmann's contracture. There is also an excellent chapter on the treatment of ununited fractures. On the whole the new edition is a work of which Dr. Scudder and the profession in America may well be proud.